August 10, 2006

The Honorable Edward M. Chen
United States Magistrate Judge
United States District Court
Northern District of California
450 Golden Gate Avenue
San Francisco, CA 94012

**Re:** ***Synopsys v. Ricoh Company, Ltd.,***
**Case No. C03-2289 MJJ (EMC)**
***Ricoh Company, Ltd. v. Aeroflex, Inc., et al.,***
**Case No. C03-4669 MJJ (EMC)**

Dear Judge Chen:

Counsel for the parties submit this joint letter in accordance with the Court's request, addressing a dispute relating to whether certain documents were properly withheld as privileged that were obtained from or provided to a third party fact witness who counsel for defendants and defendants' experts interviewed. Counsel have met and conferred repeatedly, and while they have resolved a number of other disputes, they are at an impasse on two different privilege related issues, which are being addressed in two separate joint letters.

**Ricoh's Statement**

In the 1980's, Yoon-Pin Simon Foo was a student at the University of South Carolina, and was one of several students who worked for Dr. Kobayashi's company, International Chip Corporation ("ICC"). Dr. Kobayashi recruited Mr. Foo to the University, and acted as his advisor for several years. In 1987, Mr. Foo had a disagreement with Dr. Kobayashi regarding Mr. Foo's failure to complete a project for ICC, and Mr. Foo changed advisors. Prior to the falling out, Mr. Foo did some limited computer coding work for ICC, and under the direction of Dr. Kobayashi, helped enter some the computer software code that was included in a version of ICC's software called Knowledge Based Silicon Compiler. KBSC's documents reflect that Mr. Foo was among the least active of the students who did work for ICC.

Nearly twenty years later, in April 2006, counsel for the Aeroflex Defendants and Synopsys contacted Mr. Foo, and agreed to pay him $250 per hour to "consult" about Mr. Foo's work for ICC in the 1980's. Defendants' counsel exchanged a large number of documents with Mr. Foo, but have refused to produce them. Apparently as a result of these conversations, on April 24, 2006, defendants alleged for the first time in their supplemental invalidity contentions, claiming on information and belief that Mr. Foo was the inventor, or at least a co-inventor, of some of the concepts disclosed in the '432 patent. (Exh. 1, at 11-14.) Ricoh promptly subpoenaed Mr. Foo as a fact witness on May 3 (Exh. 2), and on May 19, 2006, defendants produced some documents, as well as a privilege log. (Exh. 3). On May 22, Ricoh's counsel challenged the assertion of privilege (Exh. 4), and the next day defendants' counsel (Ms.

DeMory) responded that "[w]e have properly asserted privilege with regard to all logged communications and will not be producing any additional documents." (Exh. 5). Mr. Foo was deposed on May 31, 2006, where he made several astonishing claims, including the fact that he was the sole inventor of claim 13 (the main claim asserted in this litigation), but had virtually no documents to back this assertion, and never told anyone about it his "invention."

Until July 28, 2006, Ricoh understood that defendants were withholding certain Foo documents based upon an agreement of counsel that communications between non-testifying experts and counsel need not be logged. This agreement was memorialized in the Stipulated Order of July 5, 2006, which provides, in relevant part:

> The parties agree that documents responsive to any document request made in this litigation that fall within the exceptions of paragraph 2(b), or that post-date the filing of Ricoh's Complaint and are communications exclusively between client and trial counsel, between employees of a party for the purpose of obtaining information for trial counsel, or trial counsel and non-testifying experts (who are not otherwise employees of the client) and that have been withheld by any party based on privilege, need not be logged, and that the failure by any party to serve such a log is not a waiver of any privilege.

During a meet and confer on July 28, however, Ricoh learned that the communications between Mr. Foo and defendants' counsel were not Rule 26(b)(4)(B) communications between a non-testifying expert and counsel, but instead were ordinary (and discoverable) communications between a percipient third party and counsel. For example, defendants recently served an expert report by Dr. Mitchell that revealed that Dr. Mitchell was relying upon several conversations with Mr. Foo.[1] Based upon the reliance by defendants' expert upon the conversations with Mr. Foo, Ricoh sought clarification of the basis for the assertions of privilege of the Foo documents, but defendants refused to clarify their log. As a result of Ms. DeMory's letter of May 23 (Exh. 5) and the July 5, 2006 Stipulated Order, Ricoh's counsel had previously been led to believe that the documents on the Foo privilege log were communications between a non-testifying expert and counsel. During the July 28 and August 4, 2006 meet and confers, however, defendants' counsel admitted that, contrary to the implication in defendants' May 23 letter, the withheld documents related to facts from a percipient witness regarding events back in the 1980s. It appears that these documents are not the result of any legitimate expert consulting in April and May 2006, which would be protected from disclosure by the July 5 Order. Instead, it appears that the logged documents are nothing more than emails between defendants' attorneys and a third party fact witness.

The withheld documents are obviously relevant, especially because Mr. Foo is the sole source of information for an important aspect of defendants' invalidity argument. Ricoh is entitled to examine the withheld documents to determine whether there are variances between

[1] Dr. Mitchell's expert deposition is scheduled for August 18, 2006. Ricoh hopes to resolve this dispute and obtain the underlying documents by August 17.

what he told defendants' attorneys, and what he may have told defendants' experts, and whether those experts misunderstood him. Ricoh is also entitled to know how much he was paid for his "consulting" so the jury may weigh Mr. Foo's credibility.

The parties agree that "[t]he party asserting the privilege must make a *prima facie* showing the privilege protects the information the party intends to withhold." *United States v. Bergonzi*, 216 F.R.D. 487, 493 (N.D. Cal. 2003) (Jenkins, J.). Communications, including emails, between third party fact witnesses and trial counsel are not protected from disclosure by the attorney work product privilege. *See Petition of Bloomfield S.S. Co.*, 42 F.R.D. 348, 350 (S.D.N.Y. 1994) (refusing "[t]o expand the protection of privilege now afforded to attorney-client communications so as to embrace communications between an attorney and a fact witness").

Defendants' mere retention of Mr. Foo as a non-testifying expert under Rule 26(b)(4)(B) does not transform his status as an ordinary fact witness. This Court has held that "Rule 26(b)(4)(B), however, does not address itself to the expert whose information was not acquired in preparation for trial but rather because he was an actor or viewer with respect to the transactions or occurrences what are part of the subject matter of the lawsuit. Such an expert should be treated as an ordinary witness." *Atari Corp. v. Sega of America*, 161 F.R.D. 417, 421 (N.D. Cal. 1994) Where, as here, defendants have "retained" as a "consultant" a former employee of a co-owner of the patent in suit, and used that "consulting relationship" to avoid discovery, such actions are contrary to public policy. *Id.* ("Additionally, public policy disfavors the utilization of an adversary's former employees as experts in order to stunt discovery.") Defendants have not disputed that the items on the Foo privilege log are communications relating to his claim that his is a co-inventor of the '432 patent, and *not* related to any expert opinion. Indeed, on August 4, defendants' counsel told Ricoh's counsel that their primary basis for refusing to produce the documents is because they think this request is too late, *not* because they think that the documents really are privileged. This Court should reject such sharp practice. The case law makes clear that such communications between a fact witness and defendants' counsel are not privileged, and they are not protected from discovery by Rule 26(b)(4)(B) because these communications do not relate to information acquired in preparation for trial.

During the meet and confers, defendants' counsel conceded that the logged communications are relevant. Defendants did not seriously dispute that the withheld communications did not fall within the "non-testifying expert" exception in the July 5 Order. Nor did defendants dispute that the reliance by their experts upon Mr. Foo, and the experts conversations with Mr. Foo, make these communications an important issue. Instead, defendants argued during the meet and confers that Ricoh's request is untimely, because discovery closed two months ago. This argument fails for three reasons. First, Ricoh did not learn until the July 28, 2006 meet and confer that the withheld documents were not being withheld pursuant to the "non-testifying expert" exception, but instead on an improper basis – simply because they were communications between counsel and a third party witness. Second, the issue is relevant because defendants' experts elected to speak to and rely upon their conversations with Mr. Foo. Had defendants' experts not done so, the issue would not have been raised. Third, defendants

repeatedly have sought and obtained the right to continue to pursue discovery after the cut-off, and there is no undue prejudice occasioned by Ricoh's request, especially when Ricoh discovered less than two weeks ago that the basis for defendants' privilege claim was unfounded.

Ricoh's request should be granted because it is discrete, because defendants have acknowledged that the original basis of the withholding of documents was not accurate, and because the information is relevant.

**Statement of Simon Foo and Howrey**[2]

This motion is untimely. There is no question that Ricoh has decided to pursue this issue now in a transparent effort to deflect the Court's attention from the serious issues raised in the Defendants' letter brief on the documents Ricoh has improperly withheld (not to mention occupying Defendants' attorneys during a very busy period, where there are ten expert depositions scheduled in the next two weeks and dispositive motions due next Friday). Ricoh's pure tactical rationale in bringing this motion becomes evident when reading its moving portion above — there is no clear statement of the relief it seeks.

The motion can and should be rejected on the sole ground of untimeliness. As evidenced on the face of its motion (referencing May communications and a May deposition), Ricoh has had full knowledge of the facts that form the basis for this request since long prior to the deadline for filing this motion. Ricoh opted not to do so at the appropriate time, and is only doing so now to deflect attention from its own bad acts. As the Court is aware from prior motions, Ricoh has hidden the existence of relevant documents through failure to disclose them on a privilege log — and given that Ricoh only recently provided that log (under Court order), Defendants are moving in a separate joint letter for the production of documents Ricoh has withheld on spurious claims of privilege.

This trumped-up motion is completely different — Ricoh has been aware of ***all*** of the facts relevant to this motion for quite some time. It deposed Dr. Foo for six hours, and even asked questions of Dr. Foo during that deposition regarding his consulting arrangement with Howrey. It has received hundreds of pages of documents from Dr. Foo. And, most importantly, it received the privilege log at issue here almost three months ago, which, unlike Ricoh's shifting sands approach to logs (i.e., first providing no privilege log at all and then serving supplemental and revised supplemental logs when the late log is challenged), has not changed one bit. It is plain that Ricoh does not actually need the information it claims; if it did, it would have moved for the information at the appropriate time (and, indeed, it even questioned the Foo log at the end

[2] The documents Ricoh seeks to compel have not been withheld as privileged by the Customer Defendants or Synopsys, but by Simon Foo (documents 20-22 and 24-28) (who is represented by Howrey) and Howrey (documents 1-19 and 23). That said, Howrey, on behalf of itself and Dr. Foo, its client, will respond to the above motion.

of May, but apparently was satisfied with the answers). It simply wants to distract all concerned with a frivolous motion.

The Court's most recent scheduling order (*Synopsys* Dkt. No. 354) set the discovery motion cutoff as June 7, 2006, in compliance with Civil Local Rule 26-2, which provides that "no motions to compel fact discovery may be filed more than 7 court days after the fact discovery cut-off...." Civ. L.R. 26-2. Amazingly, Ricoh states that Defendants' reliance on such Court-ordered deadlines and the Local Rules is a "sharp practice," but this exact argument has recently been rejected by this Court. *See Digital Envoy, Inc. v. Google, Inc.*, 2006 U.S. Dist. LEXIS 24865 at *18-*19 (N.D. Cal. Mar. 28, 2006) (rejecting argument that reliance on Civ. L.R. 26-2 was a "sharp practice" and denying motion to compel as untimely). Ricoh simply has no excuse for waiting so long past the discovery motion cutoff to bring this motion. As Exhibits 4 and 5 show, the precise issue raised now was first raised by Ricoh on May 22, to which a response was given on May 23. Ricoh failed to pursue the issue either at that time or after Dr. Foo's deposition, during which substantial testimony was taken about his consulting relationship with Howrey. (Ex. 6 at 17:15-19:20). Indeed, at his deposition, Dr. Foo refused to answer on work product grounds the amount of money Howrey had provided him (*id.* at 18:12-19:6; 21:7-11) — the exact question on which Ricoh now claims to seek an answer through production of the withheld documents. Ricoh was well aware that documents and information were being withheld by Dr. Foo and Howrey prior to the discovery motion cut-off in June. It failed to bring a motion to compel then, and should not be allowed to bring a motion to compel now.

Ricoh makes three arguments to excuse its tardiness. None is persuasive. First, it says that it was under a misapprehension about the rationale for the withholding of the logged documents. This is simply wrong. The Foo privilege log makes clear that certain documents were withheld on work product grounds because they "reflect[] litigation strategy of Howrey attorneys," and others were withheld on attorney/client (and work product) grounds because they were confidential communications regarding Ricoh's subpoena of Dr. Foo. This rationale has never changed. There was nothing misleading in the May 23 letter, nor any change in position during the meet and confer. The only thing that has changed is Ricoh's tactical calculation — it is now in Ricoh's interest, for whatever reason, to raise this issue.

Indeed, Ricoh's contention above that: "During a meet and confer on July 28, however, Ricoh learned that the communications between Mr. Foo and defendants' counsel were not Rule 26(b)(4)(B) communications between a non-testifying expert and counsel, but instead were ordinary (and discoverable) communications between a percipient third party and counsel" is nonsensical fiction. First, it is unsupported by any facts. Second, Ricoh always knew that Dr. Foo had factual information — as it states above, "Ricoh promptly subpoenaed Mr. Foo as a fact witness on May 3." Ricoh was fully aware of Dr. Foo's relationship to the facts of this case well before the Defendants — for instance, a Ricoh attorney spoke on two occasions with Dr. Foo as early as late 2002 or early 2003 (Ex. 6 at 19:21-20:13, 106:20-107:12), and documents produced by Ricoh reflect work he did on the KBSC system. Third, Ricoh had a full and fair opportunity to question Dr. Foo about all facts (including any he could have shared with either Dr. Mitchell or Howrey). Thus, going to the merits, Ricoh already has all the information to which it is

entitled, and Ricoh's claim that it just uncovered a sinister plan to hide information is simply trumped-up and false.

Ricoh's second excuse for its belated filing is that Defendants' experts spoke to and relied upon Dr. Foo. This does not turn a fact discovery issue (i.e., one on which a motion needed to be filed in June) into an expert discovery issue (i.e., one on which discovery is still open). Ricoh utilized its opportunity to take fact discovery of Dr. Foo to the fullest, obtaining six hours of sworn testimony. (*See* Ex. 6) The fact that experts in this case have spoken to Dr. Foo does not change this fact. Ricoh can ask Dr. Mitchell what he was told by Dr. Foo;[3] it can impeach that information (should it be appropriate) with Dr. Foo's deposition testimony.[4] There is simply no need to invade the work product of Howrey attorneys, or to pierce Dr. Foo's attorney/client privilege.

The final excuse by Ricoh is that Defendants have continued discovery after the cutoff. This is a non-sequitur. The discovery Defendants have obtained since the cutoff is due directly to the comprehensive motion to compel that Defendants ***timely*** filed on June 7. Ricoh elected not to file any motion on that date. The fact that Defendants *complied* with the Court's scheduling order and the Local Rules cannot possibly excuse Ricoh's *failure* to do the same. Ricoh's failure to raise this issue until two months after the discovery motion cutoff is fatal.

Ricoh fares no better on the merits. First, Ricoh does not really address the merits and it does not even articulate which documents it seeks.[5] Second, Ricoh has several facts wrong,[6] and

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[3] The Court may be interested to know that, at least as of the writing of this response, Ricoh has refused to commit to taking the deposition of Dr. Mitchell, and has already foregone the deposition of another one of Defendants' invalidity experts.

[4] Of course, this is not to suggest that there is anything remotely interesting in the withheld documents. Indeed, as the log makes clear, and as was already explained to Mr. Brothers, they simply reflect the "who, what, where and when" of Howrey's work product investigation in this case and /or communications with its client, Dr. Foo. The documents were withheld to protect Mr. Foo's attorney/client privilege and Howrey's litigation strategy — the very types of documents a privilege log is designed for. By contrast, Ricoh's utter *failure* to inform Defendants of the existence of certain documents until the bitter end of discovery (and beyond) was clearly designed to hamper the defense of this case, and even when it served a privilege log, Ricoh improperly withheld documents, as detailed in the separate letter brief.

[5] For instance, does Ricoh want *all* documents on the Foo log produced, including those on which attorney/client privilege was claimed? If so, on what basis does it challenge the assertion of attorney/client privilege? And if it does so, how can Ricoh make a principled distinction between the privilege claimed by Dr. Foo and Howrey and that claimed by Ricoh/KBSC/Dickstein Shapiro on conversations with Dr. Kobayashi, another third party fact witness who is also a client of counsel to this case? It cannot. If the documents on the Foo privilege log are to be produced, all communications between Dickstein Shapiro and Dr. Kobayashi should be produced as well, and Defendants request that the Court consider this potential remedy should it decide to grant Ricoh's motion.

[6] Like the rest of the Dr. Foo story recounted by Ricoh above, Ricoh's contention that Dr. Foo was an ICC employee is unsupported and unsupportable. Ricoh also suggests that Dr. Foo was improperly retained by Howrey to shield

makes assertions that simply are not true. The documents on the Foo log are properly withheld, and nothing undersigned counsel said at the meet and confer even hinted that this was not the case. On the face of the log, the attorney/client privilege applies to documents 20-22 and 24-28, since it is obvious that Howrey represents Dr. Foo — see Exhibit 6 at 21:12-20 — and Ricoh makes no argument to the contrary. Similarly, the log demonstrates that the work product protection afforded by Rule 26(b)(3) applies to documents 1-19 and 23. Discovery of work product is permissible ***only*** upon a showing of substantial need and undue hardship — and even then not if the work product reflects attorney "mental impressions, conclusions, opinions, or legal theories," as the log demonstrates. Finally, Ricoh has not attempted to make any showing of substantial need or undue hardship (nor could it given that it deposed Dr. Foo for six hours), nor has it challenged the assertion on the log that the withheld work product documents reflect the legal strategy of Howrey attorneys. Thus, even if the Court were inclined to reach the merits of this motion, the motion would still have to be denied.

**Ricoh's Reply**

Defendants do not dispute Ricoh's showing that, under the case law, the Foo communications with the Howrey firm or defendants' experts are not protected from disclosure by the attorney work product doctrine. Even if the logged documents contained work product, that status was lost when defendants' counsel deliberately shared them with a duly subpoenaed third party fact witness. By definition, the communications with Mr. Foo are not work product. Nor do defendants dispute that, under *Atari Corp. v. Sega of America*, 161 F.R.D. 417, 421 (N.D. Cal. 1994), their assertion of privilege regarding factual communications with a third party is legally unsupportable and inconsistent with public policy. Thus, Ms. De Mory's assertion on May 23 that they "properly asserted privilege" over these documents is simply wrong.[7]

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factual information from discovery. This is nonsense — Ricoh obtained ample factual discovery from Dr. Foo, a non-party to this litigation. Nothing has been shielded. Dr. Foo was deposed under oath for six hours; hundreds of pages of documents were produced (including any and all documents in Dr. Foo's possession that existed prior to the commencement of the consulting arrangement); and the only thing withheld were a handful of communications reflecting attorney/client communications and work product, which, unlike Ricoh's practice in this case, were disclosed to Ricoh via an adequate privilege log.

[7] Defendants now attempt to distinguish between the documents that were withheld based upon the now-repudiated basis of work product, and a few documents on which they claim are properly withheld on the basis of attorney-client privilege. During the meet and confers, defendants made no such distinction between the documents and the privilege claims, and stated that they would be opposing this motion solely based upon their view that the motion is untimely. Because defendants took such a position and also refused to amend the log to explain the basis of their claims, they should be estopped from now relying on such vague assertions. In any event, the attorney-client privilege claim with a third party is inconsistent with *Atari*, where Sega contended that the documents were protected by the attorney-client privilege. The Court rejected this argument and held that factual communications with third party witnesses could not be cloaked by any privilege. 161 F.R.D. at 421 (holding that, where a so-called "expert" like Mr. Foo is "an actor or viewer with respect to transactions or occurrences that are part of the subject matter of the lawsuit[,] . . . [s]uch an expert should be treated as an ordinary witness.") *See also Barkwell v. Sturm Ruger Co.*, 79 F.R.D. 444, 446 (D.Alaska 1978) (holding that an expert's opinions "developed prior to his association with defendant and are routinely discoverable" and that "Rule 26(b)(4)(B) by its very terms . . . does not

On the merits, there is no legitimate dispute that the basis for withholding the Foo documents was proper, because it was not. Defendants have cited no case law and have identified no facts to support the withholding of these documents. And although defendants point out that Ricoh has had an opportunity to depose Mr. Foo, they obscure the fact that they precluded Ricoh from questioning the witness on the substance of his so-called consulting (Ex. 6, Foo Tr. at 18-19). In addition, Ricoh still does not have the documents evidencing Mr. Foo's exchanges with defendants' counsel and experts.

Defendants argue (at footnote 5) that Ricoh's recitation of the facts regarding Mr. Foo is "unsupported and unsupportable." Ricoh had hoped to avoid burdening the Court with excessive documents, but defendants' challenge to our credibility cannot be ignored. Because defendants have objected to our addition of supporting cites to our factual statements in our opening section, attached as Exh. 7 is the first two paragraphs of our opening section of this joint letter, annotated with supporting citations to the Foo transcript and other documents.

This motion is not untimely, because it was triggered by expert discovery and defendants' non-compliance with the July 5 stipulated order.[8] Between the end of May and late July, Ricoh thought that the basis for defendants' privilege claims over the Foo documents was because Mr. Foo had been retained as a non-testifying consultant. This perception was reinforced by defendants' counsels' instructions during Mr. Foo's deposition to not answer questions regarding his consulting on the basis of work product (Exh. 6, at 18-19), as well as the provision in the July 5 stipulated order that such communications with non-testifying experts need not be produced. Only after defendants' expert, Dr. Mitchell, explicitly stated in his report that he was relying upon conversations with Mr. Foo (which conversations presumably were part of the "consulting" work on which Mr. Foo had been instructed not to testify about), did Ricoh realize that the assertion of privilege was improper. As a result, in July we challenged defendants to explain the basis of privilege, and their response was to concede that the documents really are not privileged, but because defendants had suceeded in misleading Ricoh for less than two months, defendants would not produce them.

Even if this motion was to be considered to be past the deadline, the requested relief should still be granted. This Court repeately has permitted discrete discovery in this case past the fact discovery deadline, including Ricoh's discovery on the newly disclosed products, defendants' discovery of the KBSC documents, and defendants' insistence that they depose the

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apply to facts known or opinions held which were not acquired or developed in anticipation of litigation"). Likewise, defendants' assertion that Mr. Foo and Dr. Kobayashi are similarly situated is simply incorrect. Dr. Kobayashi is the named co-inventor of the '432 patent, has had a longstanding common interest with Ricoh, and has been represented by counsel solely as a fact witness for many years. Mr. Foo has no common interest with defendants or any other basis for asserting privilege with respect to his alleged involvement in the development of the '432 patent.

[8] Defendants have issued numerous subpoenas after the May 31 discovery cutoff in conjunction with expert discovery.

University of South Carolina.[9] The Court should do so here, especially when the need for the remedy is occasioned by defendants' misleading actions; where the remedy is discrete; the time period between the misrepresentation and Ricoh's discovery of the facts is so short (two months); where Ricoh diligently pursued its rights once it learned that the privilege assertion was improper; where there is adequate time before trial; and where Defendants have shown no prejudice, let alone undue prejudice, that they would suffer if the Court was to grant Ricoh the requested relief. *See, e.g., Int'l Truck and Engine Corp. v. Int'l Truck Intellectual Prop. Co.*, 2004 U.S. Dist. LEXIS 27447, *13 (N.D.Ind. 2004) (granting motion to compel filed after the end of fact discovery and prior to the filing of dispositive motions because of a lack of "aggravating circumstances" that might prejudice the non-moving party). In fact, defendants' assertion (at footnote 4) that the withheld documents do not contain "anything remotely interesting," if true, confirms that there is no prejudice in producing them. Ricoh expects, however, that the documents will show inconsistencies in Mr. Foo's remarkable claim of inventorship, and thus will weaken one of defendants' main defensive arguments.

Ricoh's remedy is simple: The documents on the Foo privilege log should be produced. In addition, the Court should also compel production of additional unlogged and unproduced Foo documents, including the consulting agreement, invoices and payments, and any other documents between or among Mr. Foo, defendants' counsel, and defendants' experts.

Respectfully submitted,

By: /s/ Ethan B. Andelman
Ethan B. Andelman
Counsel for SYNOPSYS, INC. and Customer Defendants AEROFLEX INCORPORATED, AEROFLEX COLORADO SPRINGS, AMI SEMICONDUCTOR, INC., MATROX ELECTRONIC SYSTEMS, LTD., MATROX RAPHICS, INC., MATROX INTERNATIONAL CORP., and MATROX TECH, INC.

By: /s/ Kenneth W. Brothers
Kenneth W. Brothers
Counsel for RICOH COMPANY, LTD

[9] Even though defendants claimed the University's deposition was "critical" to their case, and had been scheduled for August 9, it was canceled by defendants on August 8.

EXHIBIT 1

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

RICOH COMPANY, LTD.,

Plaintiff,

vs.

AEROFLEX INCORPORATED, AMI SEMICONDUCTOR, INC., MATROX ELECTRONIC SYSTEMS LTD., MATROX GRAPHICS INC., MATROX INTERNATIONAL CORP., MATROX TECH, INC., AND AEROFLEX COLORADO SPRINGS, INC.

Defendants.

SYNOPSYS, INC.,

Plaintiff,

vs.

RICOH COMPANY, LTD.,

Defendant.

Case No. C03-04669 MJJ (EMC)
Case No. C03-02889 MJJ (EMC)

**FINAL INVALIDITY CONTENTIONS OF SYNOPSYS AND THE CUSTOMER DEFENDANTS PURSUANT TO PATENT L.R. 3-3 AND L.R. 3-6**

Pursuant to Rules 3-3 and 3-6 of the Patent Local Rules of Practice in Civil Proceedings before the United States District Court for the Northern District of California ("Patent L.R."), Synopsys, Inc. ("Synopsys") and Defendants Aeroflex, Inc., Aeroflex Colorado Springs, Inc., AMI Semiconductor Inc., Matrox Electronic Systems, Ltd., Matrox Graphics Inc., Matrox International Corp., and Matrox Tech, Inc. (collectively, the "Customer Defendants") submit the following Final Invalidity Contentions ("Invalidity Contentions") in response to the Disclosure of Asserted Claims and Final Infringement Contentions ("Infringement Contentions") served by plaintiff Ricoh Company, Ltd. ("Ricoh") on March 24, 2006. These disclosures incorporate the attached Exhibits 1 through 57.

Synopsys and the Customer Defendants base these Invalidity Contentions on their current knowledge, understanding and belief as to the facts and information available as of the date of these contentions. Synopsys and the Customer Defendants have not yet completed their investigation, collection of information, discovery, or analysis relating to this action, and additional discovery may require them to supplement, amend and/or modify these contentions. More specifically, Ricoh has not produced all of the information responsive to Synopsys' and the Customer Defendants' discovery requests. Synopsys and the Customer Defendants also continue to search for additional invalidating prior art for the asserted claims of U.S. Patent No. 4,922,432 (the "'432 patent"). Consequently, based upon a showing of good cause, Synopsys and the Customer Defendants may subsequently seek an order from the Court allowing them to amend, modify, or supplement these contentions within a reasonable time after the discovery of any additional invalidating prior art.

Synopsys and the Customer Defendants make these disclosures relative to and based on Ricoh's Final Infringement Contentions. Certain references are included and certain features are cited to as meeting particular elements of the asserted claims of the '432 patent only because Ricoh has cited to similar portions of Design Compiler in its Final Infringement Contentions as evidence of infringement. Nothing in these contentions or the accompanying charts should be construed to constitute an admission that a particular element or limitation is met for infringement purposes by a particular reference or by particular cited text. By including these citations and quotations in its invalidity charts, Synopsys and the Customer Defendants are not conceding that the asserted claims of the '432 patent can be read in the manner that Ricoh implicitly asserts or that the Court's April 7, 2005

Claim Construction can be applied in the manner that Ricoh implicitly has done. Several such examples include but are not limited to:

1. Ricoh claims that in Design Compiler, the "architecture independent actions and conditions" limitation is satisfied by, among other things, register-transfer level specifications (RTL). Synopsys and the Customer Defendants understand, however, that the Court's Claim Construction explicitly excludes RTL from the definition of "architecture independent actions and conditions." Nevertheless, Synopsys and the Customer Defendants have included RTL in certain claim charts, because, if Design Compiler infringes because of its use of RTL as a design input, as set forth in Ricoh's infringement contentions, then the use of RTL in the noted prior art references would demonstrate anticipation.

2. Similarly, Synopsys and the Customer Defendants have relied herein on references that teach the use of local transformations because Ricoh claims in its infringement contentions that SOT tricks meet the "rules" limitations of the asserted claims of the '432 patent.

3. Similarly, Synopsys and the Customer Defendants have relied herein on references that include algorithmic cell selection methods based on Ricoh's assertion that Design Compiler infringes the asserted claims of the '432 patent.

4. Similarly, Synopsys and the Customer Defendants have relied herein on inferences that do not include an explicit expert system or inference engine based on Ricoh's assertion that Design Compiler infringes the asserted claims of the '432 patent.

5. Similarly, Synopsys and the Customer Defendants have relied herein on references relating to claim 14 to the extent that Ricoh claims that the output of Design Compiler is used in creating mask data.

## I. DISCLOSURES UNDER PATENT L.R. 3-3(a) & 3-3(b).

### A. INVALIDITY OF '432 PATENT UNDER 35 U.S.C. § 102(a), (b) or (e).

Synopsys and the Customer Defendants contend that each of the asserted claims of the '432 patent (claims 13-17) is anticipated by one or more of the following items of prior art under Sections 102(a), (b) or (e).

**1. Patents.**

**a. U.S. Patent No. 4,703,435 to Darringer et al. (United States), issued 10/27/87.**

**2. Printed Publications.**

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| 1 | M. R. Buric, C. Christensen, and T. G. Matheson, *The Plex Project: VLSI Layouts of Microcomputers Generated by a Computer Program*, Proc. International Conference on Computer Aided Design (ICCAD '83), pp. 49-50, 1983. (DEF022881 – DEF022882). |
| 2 | Camposano, R. et al., *Automatic Data Path Synthesis from DSL Specifications*, Proceedings of the IEEE Int'l Conf. on Computer Design (Oct. 1984), pp. 630-635. (DEF074758 – DEF074764). |
| 3 | Rosenstiel, W., et al., *Synthesizing Circuits from Behavioural Level Specifications*, Proceedings of the 7th Int 'l Conference on Computer Hardware Description Languages and their Applications (1985), pp. 391-403. (DEF072576 – DEF072588). |
| 4 | E.F. Girczyc & J.P. Knight, *An ADA to Standard Cell Hardware Compiler Based on Graph Grammars and Scheduling*, ICCD '84, 726-31 (1984). (DEF018132–DEF018139). |
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| 7 | Gajski, D., et al., *Towards Intelligent Silicon Compilation* Design Systems for VLSI Circuits 365-383 (1987). (DEF007990 – 008008). |
| 8 | Nobuaki Kawato, et al., *DDL/SX: A Rule-Based Expert System for Logic Circuit Synthesis*, Proceedings of the Int'l Symposium on Circuits and Systems, 885-888 (1985). (DEF070832–DEF070835). |
| 9 | Tamio Mano, et al., *Knowledge-Based Expert System for Hardware Logic Design*, Proceedings of 1986 Joint [ACM-IEEE] Computer Conference, 979-986 (1986). (DEF070844–DEF070851). |
| 10 | Takao Saito, et al., *A Rule-Based Logic Circuit Synthesis System for CMOS Gate Arrays*, 23rd Design Automation Conference, 594-600 (1986). (DEF018277–DEF018283). |
| 11 | Trickey, *Compiling Pascal Programs into Silicon* (July 1985). (DEF074780 – DEF074914). |
| 12 | P.G. Paulin, et al., *HAL: A Multi-Paradigm Approach to Automatic Data Path Synthesis*, 23rd Design Automation Conference, 263-70 (1986). DEF000490–DEF000494). |
| 13 | THADDEUS J. KOWALSKI, AN ARTIFICIAL INTELLIGENCE APPROACH TO DESIGN (Kluwer Academic Publishers) (1985). (DEF007122–DEF007241). |
| 14 | T.J. Kowalaski, et al., *The VLSI Design Automation Assistant: From Algorithms to Silicon*, IIEE Design & Test 33-43 (1985). (DEF018108–DEF018118). |
| 15 | Michael C. McFarland & Thaddeus J. Kowalski, *Assisting DAA: The Use of Global Analysis in an Expert System*, 1986 ICCD 482-485 (1986). (DEF018403–DEF018406). |
| 16 | John A. Darringer, et al., *Logic Synthesis Through Local Transformations*, 25 IBM J. Res. & Dev. 272-280 (1981). (DEF016515–DEF016523). |
| 17 | William H. Joyner, Jr., *Technology Adaptation in Logic Synthesis*, 23rd Design Automation Conference, 94-100 (1986). (DEF018087–DEF018093). |
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| 20 | Marwedel, P., *The Mimola Design System: Tools for the Design of Digital Processors*, from 21st Design Automation Conference (1984) at pp. 587-593. (DEF072569-DEF072575). |
| 21 | David Gregory, et al., *SOCRATES: A System for Automatically Synthesizing and Optimizing Combinational Logic*, 23rd Design Automation Conference, 79-85 (1986). (SP04123–SP04129). |
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| 23 | Mitchell, T.M., et al., *A Knowledge-Based Approach to Design*, IEE Trans. On Pattern Analysis and Machine Intelligence, Vol. PAMI-7, No. 5, Sept., 1985, pp.502-510. |
| 24 | Shigeru Takagi, *Rule Based Synthesis, Verification and Compensation of Data Paths*, Proceedings of IEEE Conference on Computer Design, 133-138 (1984). (DEF071930–DEF071935). |
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| 26 | Trimeter Technologies, "Product Description: Logic Consultant" (1986), (MENT000014 – MENT000017). |
| 27 | Kobayashi, H., *A Knowledge-Based Approach to VLSI CAD*, AM, section RD-3 (1986). (KBSC000995 – KBSC001001). |
| 28 | Foo, Y.P.S. & H. Kobayashi, *A Knowledge-Based System for VLSI Module Selection*, IEEE Int'l Conf. Computer Design (ICCD), pp. 184-186 (Oct. 1986). (KBSC000855 – KBSC000995). |
| 29 | de Geus, Bartlett Cohen, and Hachtel, *Synthesis and Optimization of Multilevel Logic Under Timing Constraints*, IEEE Trans. on CAD of Integrated Circuits and Systems CAD-5, 4 (Oct. 1986), pp. 582-596 (DEF017626 – DEF017642). |
| 30 | David Gregory, et al., "Automatic Generation of Combinatorial Logic from a Functional Specification", ISCAS, 986-989 (1984). (DEF017598 – DEF017602). |
| 31 | Gregory, Bartlett, De Geus, Hachtel, "SOCRATES: A system for Automatically Synthesizing and Optimizing Combinatorial Logic" 23rd DAC, 79-85 (1986). (SP04123 – SP04129). |
| 32 | de Geus & Cohen, "A Rule-Based System for Optimizing Combinational Logic," IEEE Design & Test of computers, 22-32 (Aug. 1985). (SP03943 – SP03953). |
| 33 | Thaddeus Julius Kowalski, *The VLSI Design Automation Assistant: A Knowledge-Based Expert System*, Carnegie-Mellon University PhD Thesis, April 1984. |
| 34 | Simoudis, E., Fickas, S., *The Application of Knowledge-Based Design Techniques to Circuit Design*, Proc. International Conference on Computer Aided Design (ICCAD '85), pp. 213-215, 1985. |

**3. Items Publicly Known or Used, or Offered for Sale.**

The following logic synthesis systems are believed to have been in public use more than one year prior to January 13, 1988:

**a. TRIMETER**

The Trimeter system was publicly used and offered for sale prior more than one year before the filing date of the '432 patent. In particular, marketing literature was already being distributed for Logic Consultant as early as 1986.

**b. IBM EDS.**

The IBM EDS system was publicly demonstrated at the 20th Design Automation Conference in Miami Beach, Florida in June of 1983, and shown to numerous potential customers that may have hired IBM to produce designs for their ASICs. The system had been used to make over 90 chip designs by 1984. Synopsys and the Customer Defendants are proceeding with discovery to confirm these and other public uses and sales.

**c. MEGA.**

A paper describing the MEGA system was published in the Proceedings of the IEEE Int'l Conf. On Computer Aided Design, which was held in Santa Clara, California in November of 1985. Additionally, there was a presentation of the MEGA system related to this published paper at the same conference. Synopsys and the Customer Defendants are proceeding with discovery to confirm these and other public uses and sales.

**d. PLEX.**

PLEX was a project at AT&T Bell Labs. This system was published in the Proceedings of the 1983 Int'l Conference on Computer Aided Design in Santa Clara, California. On information and belief, there were presentations of the PLEX system related to these published papers at the 1983 International Conference on Computer Aided Design. PLEX was demonstrated and presented to a number of interested individuals and/or companies, including at least Coleco and National Semiconductor, during tours of AT&T Bell Labs prior to the critical date of January 13, 1987. One such presentation was videotaped and broadcast on television. Such presentations generally included live demonstrations of the working system or screen shots of the working system. Synopsys and the Customer Defendants are proceeding with discovery to confirm these and other public uses and sales.

**e. SOCRATES.**

SOCRATES was demonstrated publicly at the Design Automation Conference in Las Vegas, Nevada in 1986. Beginning as a GE research project, SOCRATES papers were published and the system shown to potential customers including CALMA and others prior to the critical date. GE offered to sell SOCATES to Optimal Solutions by at least December of 1986 and sold the software to the new company at its inception, prior to January 13, 1987. Development of SOCRATES also

occurred at public projects at Duke University and the University of Colorado. Synopsys and the Customer Defendants are proceeding with discovery to confirm these and other public uses and sales.

**f. Berkeley Synthesis System.**

This is a public project at The University of California at Berkeley. Students and professors used the system and published papers and theses regarding the system. On information and belief the source code for the system was available to public via ftp download prior to the critical date of January 13, 1987 for anyone's use. In addition, the combination of BDSyn and MIS was demonstrated at a NATO conference in Italy in mid-1986. Individuals from GE, Optimal Solutions used this code in developing aspects of Synopsys' early products.

**g. DAA – CMU.**

CMU DAA was a public project at Carnegie Mellon University and sponsored by number of companies. The CMU DAA system was delivered to its sponsors by at least 1987. Students and professors used the system and published papers and theses regarding the system. This system was published in the proceedings of numerous conferences and symposiums held in the United States including: 20th Design Automation Conference held in Miami Beach, Florida, in June 1983; 22nd Design Automation Conference in Las Vegas, NV in 1985; and the 1983 Int'l Symposium on Circuits and Systems in Newport Beach, California, in May 1983. There were presentations of the CMU DAA system related to these published papers at their respective conferences. CMU DAA was publicly demonstrated and presented to a number of interested companies prior to the critical date of January 13, 1987. Such presentations included screen shots of the working system. Public benchmarks for comparing automatic logic synthesis systems were also run through the CMU DAA system and the results disseminated. Synopsys and the Customer Defendants are proceeding with discovery to confirm these and other public uses and sales.

**h. DAA – ATT.**

AT&T DAA was a public project at AT&T. There were several published papers regarding the system. This system was published in the proceedings of numerous conferences and symposiums held in the United States including: 23rd Design Automation Conference in Las Vegas, NV in 1986; and the 1986 Int'l Conference on Computer Design in Port Chester, NY in October, 1986. There were

presentations of the AT&T DAA system related to these published papers at their respective conferences. AT&T DAA was publicly demonstrated and presented to a number of interested companies prior to the critical date of January 13, 1987. Such presentations included screen shots of the working system. Public benchmarks for comparing automatic logic synthesis systems were also run through the AT&T DAA system and the results disseminated. Synopsys and the Customer Defendants are proceeding with discovery to confirm these and other public uses and sales.

**i. Fujitsu DDL/SX.**

Fujitsu DDL/SX was developed at Fujitsu Ltd. in Kawasaki, Japan and implemented LISP and C-Prolog. This system was published in the proceedings of numerous conferences and symposiums including: IFIP Sixth International Symposium on Computer Hardware Description Languages and their Applications in Pittsburg, Pennsylvania in May 1983; Proceedings of the Fall Joint Computer Conference 1986, p.979-986, in November 1986 in Dallas, Texas; the 16th Design Automation Conference held in San Diego, California in June of 1979; 18th Design Automation Conference held in Nashville, Tennessee in June 1981; the 19th Design Automation Conference held in Las Vegas, Nevada in June 1982; 23rd Design Automation Conference held in Las Vegas, Nevada in 1986; and The International Conference On Computer Aided Design in Santa Clara, California in 1985. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**j. CHIPPE.**

Chippe was initially developed at the University of Illinois and later at Penn State and the University of California at Santa Barbara, the work was supported through funding from Gould Foundation and AT&T Bell Laboratories. Students and professors used the system and published papers regarding the system. This system was published in the Proceedings of the 23rd Design Automation Conference held in Las Vegas, NV in June of 1986, and the 24th Design Automation Conference held in Miami Beach, Florida in June of 1987. Chippe was demonstrated and presented to AT&T prior to the critical date of January 13, 1987. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**k. HAL.**

HAL was developed at Carleton University with funding from BNR and The Natural Sciences and Engineering Research Counsel of Canada. This system was published in the Proceedings of the IEEE Int'l Conf. On Computer Design, which was held in Port Chester, New York in October of 1984 and the 23rd Design Automation Conference held in Las Vegas, Nevada in June of 1986. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**l. NTT VLSI-DE.**

The NTT VLSI-DE system was developed at NTT in Tokyo, Japan, and implemented in LISP. This system was published in multiple proceedings including the IEEE Int'l Conf. On Computer Design, which was held in Port Chester, New York in October of 1984. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**m. DAGON.**

DAGON was developed at AT&T with influence, and is possibly derived, from SOCRATES and the Berkeley Synthesis Project. The system was published in the Int'l Conference on Computer-Aided Design, which was held in Santa Clara, California, on November 9-12, 1986, and the 24th Design Automation Conference held in Miami Beach, Florida in June of 1987. On information and belief, DAGON was presented to interested companies prior to the critical date of January 13, 1987. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**n. FLAMEL.**

FLAMEL was developed and used at Stanford University under a DARPA contract. Students and professors used the system and freely published articles and dissertations regarding the unclassified project by at least the Summer of 1985. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**o. CATHEDRAL.**

Cathedral was jointly developed at the University of California at Berkeley, Phillips Research Lab, Interuniversity Micro Electronics Center, and Katholieke University, the work was sponsored by the EC under ESPRIT 97 contract. Students and professors used the system and published papers regarding the system. This system was published in the Proceedings of the IEEE Int'l Symposium On Circuits and Systems, which was held in San Jose, California in May of 1986 and the Int'l Conference on Computer-Aided Design, which was held in Santa Clara, California, on November 9-12, 1987. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**p. CADDY.**

CADDY was developed at University of Karlsruhe with funding from Seimens and the DMFT of Germany. This system was published in multiple proceedings including the IEEE Int'l Conf. On Computer Design, which was held in Port Chester, New York in October of 1984, and the 22nd and 23rd Design Automation Conferences held in Las Vegas, Nevada in 1985 and 1986. There were presentations of the CADDY system related to these published papers at their respective conferences. Additionally, there were presentations of the CADDY system to U.S. corporations including, at least, IBM in 1984 and 1986. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**q. Carleton ELF.**

ELF was developed at Carleton University with funding from Northern Telecom Electronic and the Natural Sciences and Engineering Research Counsel of Canada. This system was published in the Proceedings of the IEEE Int'l Conf. On Computer Design, which was held in Port Chester, New York in October of 1984, and IEEE Int'l Symposium On Circuits and Systems, which was held in Philadelphia, Pennsylvania in May of 1987. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**r. MIMOLA/ VSYNTH.**

MIMOLA/VSYNTH was developed at Honeywell Inc., in Bloomington, MN and the University of Kiel. Professors and students, and Honeywell used the system and published papers,

thesis and manuals regarding the system. This system was published in multiple proceedings including: the 16th Design Automation Conference held in San Diego, California in June 1979; the 21st Design Automation Conference held in Albuquerque, New Mexico in June 1984; 23rd Design Automation Conference held in Las Vegas, Nevada in 1986; the 17th Annual Microprogramming Workshop, held in October and November of 1984 in New Orleans, LA, and the Proceedings of the 20th Annual Workshop on Microprogramming held in Colorado Springs, Colorado in December of 1987. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**s. VEXED.**

VEXED, which stands for VLSI Expert Editor, was developed at Rutgers University in New Brunswick, New Jersey by Professors Tom M. Mitchell, Jeffrey S. Shulman and Louis I. Steinberg. Students publicly used the VEXED system in a VLSI design class to do homework assignments. Moreover, the system was published in multiple proceedings including the Symposium on Integrated and Intelligent Manufacturing at the 1986 ASME Winter Annual Meeting held in Anaheim, California in December 1986, and the AAAI-87 Sixth National Conference on Artificial Intelligence held in Seattle, Washington in July 1987, as well as in IEEE journals. Synopsys and the Customer Defendants are seeking discovery of additional information regarding other public use, demonstration, or sale of the system.

**4. Offer for Sale and Sale of the Claimed Invention (102(b)).**

Synopsys and the Customer Defendants also contend that the claimed invention at the very least had been constructively reduced to practice when it offered for sale and sold by International Chip Corporation ("ICC") to Ricoh Company, Ltd. ("Ricoh") in a General Contractual Agreement of Understanding dated December 15, 1986 (the "Understanding"). (KBSC000005-8.) The Understanding described an exchange of technology between ICC and Ricoh; ICC agreed to license Ricoh the right to use its "pre-stage system design software for the knowledge-based silicon compiler at no cost" and "to use [its] post-stage chip layout software for the knowledge-based silicon compiler within the facilities of ICC." (Section III(3) & (4), KBSC00005.) In return for this technology, ICC obtained access to Ricoh's standard design rules and cell libraries at no cost. (Section III(1) & (2),

KBSC00005.) Although the Understanding contemplated that ICC and Ricoh would also "execute a separate individual joint development agreement and jointly develop CAD tools that employ AI," on information and belief, that agreement addressed a commercial version of the knowledge-based silicon compiler that would be jointly owned by the parties. (Section VII(2), KBSC00006.) (*See also* KBSC 00009-27.)

**B. INVALIDITY OF '432 PATENT UNDER 35 U.S.C. § 102(f).**

Synopsys and the Customer Defendants contend that each of the asserted claims of the '432 patent is invalid because the named inventors, Hideaki Kobayashi and Masahiro Shindo, did not themselves invent the subject matter that has been patented. Synopsys and the Customer Defendants are informed and believe that one or more of the following individuals should have been named as joint inventors, at a minimum: Tooru Ozeki, David Dunn, Thomas Hersch, Stuart Anderson, Frans Brinkman, Ricky Darwin, Yoon Pin Foo, Richard Ulmer, Zenji Oka, Mr. Suehiro, Robert D. Ferrell, Jaymin Yon.

For example, Dr. Foo worked in collaboration with Kobayashi from 1982 to 1987, as an undergraduate and graduate student in the Department of Electrical and Computer Engineering at the University of South Carolina. Indeed, Kobayashi was Dr. Foo's advisor for his M.S. thesis. On information and belief, much of the academic research that Dr. Foo conducted alone and in collaboration with Kobayashi led to the conception of the invention claimed in the '432 patent. In 1984, he wrote his M.S. thesis entitled "Managing VLSI Design Data with a Relational Database System," which dealt with the management of VLSI cell libraries using the INGRES relational database management system. Recognizing that commercial relational database management systems were ill-suited to managing complex VLSI design data, Dr. Foo then turned his research and development efforts towards using a frame-based scheme, which would manage VLSI cell libraries as a hierarchically nested set of "design frames." He wrote a frame-based database manager tool called FAME for this purpose, which was coded in the C language and ran on a VAX-11/780 computer.

Dr. Foo subsequently published his work, listing Kobayashi as a co-author, in a paper entitled "A Framework for Managing VLSI CAD Data," *in* Proceedings of the 1st International Conference on Applications of Artificial Intelligence to Engineering Problems, Southampton, England, Vol. II, 889-

98 (Springer Verlag, April 1986) (KBSC000904-913) [hereinafter, Foo86-a]. On information and belief, the results of Dr. Foo's research and development on FAME contributed to at least the conception of the step of "storing data describing a set of available integrated circuit hardware cells for performing the actions and conditions defined in the stored set" in claims 13-17 ('432 patent, 16:39-41) because the frame-based scheme made the VLSI CAD data more readily usable by chip designers. Indeed, Dr. Foo's article alluded to the next planned step in his research: "Future extensions to FAME include an interface to an *inference engine* for VLSI CAD applications." *Id.* at 894 (KBSC000909) (emphasis added).

Dr. Foo also researched and developed an inference engine for selecting VLSI cells, employing heuristic rules that embody the knowledge of expert VLSI designers. Dr. Foo wrote this software tool, called NEPTUNE, in the C language, and it also ran on a VAX-11/780 computer. On information and belief, the coding for NEPTUNE was completed by mid-1986. Dr. Foo published his research and development work on NEPTUNE in a paper listing Kobayashi as a co-author and entitled "A Knowledge-Based System for VLSI Module Selection," in Proceedings of the IEEE International Conference on Computer Design: VLSI in Computers (ICCD '86), Port Chester, New York 184-87 (IEEE Computer Society, October 1986) (KBSC000914-17) [hereinafter, Foo86-b].

On information and belief, the results of Dr. Foo's research and development on NEPTUNE contributed to at least the conception of the steps of "storing in an expert system knowledge base a set of rules for selecting hardware cells to perform the actions and conditions" and "selecting from said stored data for each of the specified definitions a corresponding integrated circuit hardware cell for performing the desired function of the application specific integrated circuit, said step of selecting a hardware cell comprising applying to the specified definition of the action or condition to be performed, a set of cell selection rules stored in said expert system knowledge base" in claims 13-17. ('432 patent, 16:42-44 & 16:52-55.) NEPTUNE fulfilled the need for "[a]n expert or knowledge-based system . . . to perform efficient decision-making in a large VLSI module library." Foo86-b at 184 (KBSC000914). For a specified logic function, e.g., XOR, NEPTUNE would apply a set of cell selection rules stored in an expert system knowledge base, such as heuristic rules for resolving design trade-offs between speed and area and rules for selecting the module with the simplest logic structure.

*Id.* at 184-85 (KBSC000914-915). Figure 2 in the paper illustrates NEPTUNE's basic architecture as a module selector and evaluator, accepting as input a set of design specifications and producing an optimized module set from the VLSI data stored in a knowledge base. *Id.* at 187 (KBSC000917). The paper uses the example of a digitial nonrecursive filter (DNF). *Id.* at 185 (KBSC000915).

On information and belief, Dr. Foo also contributed to the conception of the overall architecture of the preferred embodiment of the invention of the '432 patent. Sometime in approximately late 1985, he sketched out by hand a diagram of a "knowledge-based silicon compiler" that included a "parser" for translating an input specification AAF (for antecedent-action form) or SDF (state diagram form) into an "intermediate AAF" and "supporting macros." This file would then be used by a "module matcher" to create "a list of functional modules along with I/O [input/output] constraints" from data stored in the knowledge base labeled KB. A "module selector" then selects a set of modules that would be used by a "netlist generator" to create a netlist, which would then be used for "module placement and routing."

Dr. Foo's diagram is very similar in content to a short paper bearing Kobayashi's name, entitled "A Knowledge-Based Approach to VLSI CAD," sketched out "a knowledge-based system for translating high-level specifications to VLSI systems based on designer's expert knowledge." (KBSC000994-1005.) The paper disclosed the use of (1) antecedent-action form and a state diagram for expressing the behavioral specifications of a target chip (e.g., a digital nonrecursive filter (DNF)), and (2) associated user-defined macro operations for performing the mapping of the behavioral specifications to functional modules such as comparators, adders and multipliers. (KBSC000998-999.) The paper references the earlier published works by Dr. Foo and even uses the same figure from Foo86-2 showing the functional modules for implementing the DNF chip. (KBSC001001 & 1004.)

Based on his sketched diagram, Dr. Foo is at least a joint contributor to the conception of the following additional elements in claim 13 of the '432 patent:

> "storing a set of definitions of architecture independent actions and conditions" (macros)
>
> "describing for a proposed application specific integrated circuit a series of architecture independent actions and conditions" (antecedent-action form and state diagram)
>
> "specifying for each described action and condition of the series one of said stored definitions which corresponds to the desired action or condition to be performed" (parser)

> "generating for the selected integrated circuit hardware cells, a netlist defining the hardware cells which are needed to perform the desired function of the integrated circuit and the interconnection requirements therefor" (netlist generator)

('432 patent, 16:37-38, 16:45-52, 16:61-64.) Also, Dr. Foo is at least a joint contributor of the subject matter of claim 14 of the '432 patent: "generating from the netlist the mask data required to produce an integrated circuit having the desired function" (module placement and routing).

In addition, Mr. Oka recently specified that what Ricoh claims is the initial specification for KBSC (KBSC00010-28) was drafted in December 1986 by a combination of Mr. Oka, Mr. Suehiro, Dr. Kobayashi, Mr. Oziku and others from ICC. Notably, Mr. Oka testified that Mr. Shindo did not participate in drafting this specification and that his only contribution as of December of 1986 was a very high level description of what the system was to be. While Synopsys and the Customer Defendants dispute Ricoh's claim that the specification represents the first development work on KBSC, if Ricoh is correct, there is still misjoinder of inventors.

Synopsys and the Customer Defendants are seeking discovery of additional information relating to the issue of inventorship of the '432 patent.

**C. INVALIDITY OF '432 PATENT UNDER 35 U.S.C. § 102(g)(2).**

Synopsys and the Customer Defendants contend that each of the asserted claims of the '432 patent is invalid because before the alleged invention by the inventors, it had already been made in this country by the following persons who have not abandoned, suppressed or concealed it.

Properly construed, the claims of the '432 patent do not read on Synopsys' Design Compiler® software or related products. If essential limitations of the '432 patent claims are ignored, broadening the claims so as to encompass the activities of Synopsys' Design Compiler® software, then individuals working at General Electric and/or other research institutions, including the University of California at Berkeley, who formed Optimal Solutions (and later Synopsys) have a superior claim to inventorship than the named inventors of the '432 patent. The individuals who conceived of and developed the architecture of early GE/Optimal Solutions/Synopsys products included: David Gregory, Aart de Geus, William Cohen, Karen Bartlett, Karl Garrison, Gary Hachtel, Tim Moore, Russell Segal, Rick Rudell, Van Morgan and William Krieger. The original conception of the architecture for GE/Optimal

Solutions/Synopsys products dates back to at least 1984 and 1985. Synopsys is not claiming that the individuals identified above are the original inventors of any general architecture relevant to this case—only that these individuals have a superior claim to inventorship of such an architecture than the persons named on the '432 patent.

Charts describing the application of ancestral versions of Design Compiler to the claims of Ricoh's patent are attached to this submission. These charts describe how the earliest version of the Design Compiler product operated and do not describe the operation of current or recent versions of Design Compiler, almost twenty years later.

In addition, the CMU-DAA, AT:TDAA, MEGA, IBM EDS, BSS, Fujitsu, DDL/SX, CHIPPE, DAGON, NTT, HAL, CADDY, Cathedral, Flammel, Calton Elf, AT:T PLEX, MIMOLA and VEXED Systems were all conceived in whole or in part prior to the conception of the KBSC System claimed inventors of the '432 patent. Attached hereto as Exhibit 56 is a chart identifying papers written about the listed systems before the claimed inventors alleged conception.

**D. INVALIDITY OF '432 PATENT UNDER 35 U.S.C. § 103(a).**

Synopsys and the Customer Defendants contend that each of the asserted claims of the '432 patent is rendered obvious by one or more of the following items of prior art, or combination of items of prior art, as set forth below.

**1. Combination with References Teaching Input of "Architecture Independent Actions and Conditions."**

Synopsys' and the Customer Defendants' Preliminary Invalidity Contentions contained a discussion regarding the obviousness of a flowchart input format which has been omitted in light of the Court's Claim Construction which held that flowchart input is not required by the asserted claims of the '432 patent. Several of the prior art systems identified in this invalidity report did, however, utilize flowchart inputs, which was the input utilized by the preferred (the only disclosed) embodiment of the '432 patent.

Systems accepting input in the form of "architecture independent actions and conditions" for the generation of a netlist were well known in the art. The combination of software for synthesizing a lower-level description from a behavioral level description containing "architecture independent

actions and conditions" and into a lower level description (such as an RTL description) with a second program for synthesizing circuitry from the lower-level description was proposed in the literature and known in the art.

**a. Combinations.**

Such a combination is taught in the following references:

A-i. AT&T DAA
A-ii. Berkeley SYNTHESIS SYSTEM
A-iii. CADDY
A-iv. Carleton ELF
A-v. CATHEDRAL
A-vi. CHIPPE
A-vii. CMU DAA
A-viii. DAGON
A-ix. FLAMEL
A-x. Fujitsu
A-xi. HAL
A-xii. IBM EDS
A-xiii. MEGA
A-xiv. NTT VLSI-DE
A-xv. PLEX
A-xvi. MIMOLA & V-SYNTH
A-xvii. [Shiva83]
A-xviii. [Thomas81]
A-xix. [Bendas83]
A-xx. [Brayton85]
A-xxi. [Trevillyan87]
A-xxii. [McFarland86a]
A-xxiii. [Sangiovanni-Vincentelli87]
A-xxiv. [Zimmerman81]
A-xxv. [Walker85]

See sections 1, 2 and 7 of Exhibit 57. The above references, which teach taking a high-level behavioral or functional description, i.e., an input of "architecture independent actions and conditions," and synthesizing a lower-level RTL description therefrom, and the use of cascade synthesis stages in order to convert from higher level descriptions to lower level circuit descriptions, could be combined with the synthesis systems described in the following references to render the claim obvious:

A-1. SOCRATES

**b. Motivation to Combine.**

The motivation to combine these references can be drawn from several sources:

- The extensive cross-citation between publications cited in this report describing these systems.

- The [Shiva83] article discusses synthesis as a process of transforming higher-level specification to a lower-level description.
- The [Thomas81] article discusses synthesis as a process of transforming higher-level specifications to a lower-level specification and proposes linking these transformations.
- The [Sangiovanni-Vincentelli87] article proposes breaking the synthesis process into stages and cascading one level of synthesis into the next.
- The [Walker85] article describes synthesis as a transition in stages from an algorithmic description to a register transfer description, followed by allocation and a translation to a structural description.
- The [Brayton85] article describes design as a sequence of digital transformations, including transformation from a functional representation to an RTL description followed by logic synthesis and binding with technology-dependent structures.
- The [Trevillyan87] article describes possible inputs to synthesis across a range of levels of detail, and indicates that all such levels of input are possible.
- The [Bendas83] article defines synthesis as the process of translating a higher-level description to a lower-level form.
- The [McFarland86a] article describes the process of synthesizing a behavioral circuit description as including compiling the behavior description into an RTL level description.
- The [Zimmerman81] article discusses transformation of algorithmic descriptions to RTL level descriptions as part of synthesis.
- Other publications cited in sections 1, 2 and 7 of Exhibit 19 on the literature describing synthesis systems taught that high level behavioral and functional descriptions could be converted / synthesized in RTL level descriptions and/or that synthesis could be used to produce a lower level description from a higher-level one. See Ex. 19, sections 1, 2 & 7.

**2. Combination with References Teaching Use of an Expert System Knowledge Base.**

Each of the following claim elements implicates the use of an expert system knowledge base:

- "storing in an expert system knowledge base a set of rules for selecting hardware cells …" (16:42-44)
- "applying to the specified definition of the action or condition to be performed, a set of cell selection rules stored in said expert system knowledge base" (16:53-65)
- "applying to the selected cells a set of data path rules stored in a knowledge base …" (16:4-7)

**a. Combinations.**

The use of an expert system knowledge base incorporating rules for selecting cells, synthesizing data paths and synthesizing control structures (though an inference engine is not required

by the Court's claim construction many of these systems teach an inference engine as well), is taught in the following references:

B-i. IBM EDS
B-ii. CMU DAA
B-iii. AT&T DAA
B-iv. HAL
B-v. Fujitsu DDL/SX
B-vi. CATHEDRAL
B-vii. CHIPPE
B-viii. NTT VLSI-DE
B-ix. [Rosenstiel86b]
B-x. [Brewer86]
B-xi. [Gajski84]
B-xii. [Birmingham86]
B-xiii. [Wolf86]

The teachings in the references above to use an inference engine with a knowledge base incorporating rules to select cells, synthesize data paths and control structures, could be combined with the synthesis systems described in the following references to render the claim obvious:

B-1. MEGA
B-2. SOCRATES
B-3. Berkeley SYNTHESIS SYSTEM
B-4. Ancestral DC
B-5. Carleton ELF
B-6. DAGON
B-7. FLAMEL
B-8. CADDY
B-9. PLEX

**b. Motivation to Combine.**

The motivation to combine these references can be drawn from several sources:

- The extensive cross-citation between publications cited in this report describing these systems.
- The [Rosenstiel86b] article advocated the use of knowledge-based expert systems in synthesis systems. See, e.g., [Rosenstiel86] at 248-249, 254-255.
- The [Birmingham86] article advocated the application of knowledge-based expert systems to synthesis. See, e.g., [Birmingham86] at 533-534.
- The [Wolf86] article describes knowledge base for module selection by expert system. See, e.g., [Wolf86] at 867-869.
- Other publications cited in section 3 of Exhibit 19 on the literature describing synthesis systems taught that expert systems and rule bases were an appropriate and useful method for controlling the synthesis process, selecting cells, synthesizing datapaths and control paths. See Ex. 19, section 3.

**3. Combination with References Teaching Datapath and Control Generation.**

The following claim element implicates the generation of data paths and/or control circuitry:

- "generating data paths for the selected integrated circuit hardware cells" (17:8-10)

**a. Combinations.**

The use of a synthesis process to generate both data paths and control circuitry is taught in the following references:

C-i. MEGA
C-ii. CMU DAA
C-iii. AT&T DAA
C-iv. HAL
C-v. FLAMEL
C-vi. CATHEDRAL
C-vii. CADDY
C-viii. CHIPPE
C-ix. NTT VLSI-DE
C-x. Berkeley SYNTHESIS SYSTEM
C-xi. Ancestral DC
C-xii. Carleton ELF
C-xiii. IBM EDS
C-xiv. PLEX
C-xv. Fujitsu
C-xvi. MIMOLA & V-SYNTH
C-xvii. [Thomas81]
C-xviii. [Shiva83]
C-xix. [Parker84]
C-xx. [Rosenstiel86c]

The teachings in the references above to generate both data paths and control circuitry could be combined with the synthesis systems described in the following references to render the claims obvious:

C-1. SOCRATES
C-2. DAGON

**b. Motivation to Combine.**

The motivation to combine these references can be drawn from several sources:

- The extensive cross-citation between publications cited in this report describing these systems.
- The fact that the literature describing synthesis systems, described that both datapaths and control logic could be generated by the synthesis process. See Ex. 19, section 6, infra.

- The [Thomas81] article describes that designs include both control and data flow components and that the task of synthesis is to convert high level behavioral descriptions of each of these into logical or physical structures for both control and data flow circuitry. See, e.g., [Thomas81] at 1201-1203, FIGS. 1, 6.

- The [Shiva83] article describes that hardware synthesis includes synthesis of both data path and control functions. See, e.g., [Shiva83] at 76-77.

- The [Parker84] article teaches that synthesis includes elements of both data path synthesis and control synthesis. See, e.g., [Parker84] at 77-78.

- The [Rosenstiel86c] article teaches that synthesis includes components of data path synthesis and control synthesis. See, e.g., [Rosenstiel86c] at 36, 38.

**4. Mask Data Mask Data Generation Was Obvious At The Time of the Invention To A Person of Ordinary Skill in the Art.**

Claim 14 (16:66-68) implicates the generation of mask data from the netlist output of the synthesis system. As the '432 patent itself describes: "Computer-aided design systems for cell placement and routing are commercially available which will receive netlist data as input and will lay out the respective cells in the chip, generate the necessary routing, and produce mask data which can be directly used by a chip foundry in the fabrication of integrated circuits." ('432 patent, 5:40-46.) Other references also demonstrate that the production of mask data was a standard element in the process of implementing semiconductor devices. This fact is established by [Mead80] at 92-98, and [Gajski85] at 54.

## II. DISCLOSURES UNDER PATENT L.R. 3.3(c).

Attached as Exhibits 1 through 55 are charts identifying where specifically in each item of prior art identified in Section I above each element of each asserted claim is found.

## III. DISCLOSURES UNDER PATENT L.R. 3-3(d).

### A. INVALIDITY OF '432 PATENT UNDER 35 U.S.C. § 112, ¶ 1.

#### 1. Failure to Comply with the Written Description Requirement.

Synopsys and the Customer Defendants contend that each of the asserted claims of the '432 patent is invalid because the specification does not contain a written description of the claimed invention, and the manner and process of making and using it, in full, clear, concise and exact terms. Specifically:

**a. The Phrase "Architecture Independent" Constituted New Matter.**

In their April 18, 1989 Amendment, the applicants amended the specification and claims by inserting the phrase "architecture independent" to describe the claimed "actions and conditions." (4/18/89 Amendment at 1-2 (amending specification), 6 (amending original claim 20 (issued claim 13) & 7-8 (amending abstract)). The insertion of the phrase "architecture independent" to the specification and the asserted claims of the '432 patent introduced new matter to the patent application, in violation of 35 U.S.C. § 132. Not only does this amendment give rise to a separate ground of invalidity under 35 U.S.C. § 132, but it also violates the written description requirement, which prevents applicants from using the amendment process to update their disclosures (claims or specification) during the pendency of the application in the Patent Office. As of the date of the application for the '432 patent, January 13, 1988, the applicants were not in possession of the invention covered by the asserted claims because the specification they submitted to the Patent Office did not disclose and teach the claimed step of "storing of a set of definitions of *architecture independent* actions and conditions" or the claimed step of "describing for a proposed application specific integrated circuit a series of *architecture independent* actions and conditions."

In addition, in its Final Infringement Contentions, Ricoh appears to rely on a construction of the phrase "architecture independent" that encompasses register-transfer level design inputs. There is no support in the specification of the '432 patent for construing the phrase "architecture independent" in this manner, and if the phrase were to be given this construction (which has been explicitly rejected by the Court), the '432 patent would lack written description support and would not be enabled, in violation of 35 U.S.C. § 112.

**b. No Design Input Other Than a Flowchart Has Been Disclosed.**

The asserted claims of the '432 patent include the step of "describing for a proposed application specific integrated circuit a series of architecture independent actions and conditions." ('432 patent, 16:45-47.) This step has been construed by the Court to mean "describing an input specification containing a series of desired functions to be performed by the desired ASIC." (4/7/05

Claim Construction Order at 14:5-8.) Based on the Court's construction of "architecture independent actions and conditions," the described input specification must capture only the "functional or behavioral aspects of a portion of a circuit (or circuit segment) that does not imply a set architecture, structure, or implementing technology, but excludes the use of register-transfer level descriptions as taught in Darringer." (4/7/05 Claim Construction Order at 12:16-19.) Subject to this requirement, the input specification in the asserted claims can purportedly take any form.

The '432 patent, however, does not provide written support for any form of design input specification other than a flowchart input. ('432 patent, 2:21-27, 3:50-59, 4:8-38, Figs. 1*a* & 10) Ricoh has conceded that the "statelist" contained in Appendix A to the '432 patent ('432 patent, 14:8-29) is not an input to the KBSC system that is the subject of the asserted claims but rather, is an intermediate file produced from a flowchart input. ('432 patent, 13:32-35.) This deficiency in the specification of the '432 patent demonstrates that the applicants were not in possession of an invention that provided to a design engineer who does not have highly specialized skills and expertise in VLSI design another type of input expressing only the necessary logical steps for completing a task. As a consequence, the '432 patent cannot cover a design input specification besides a flowchart without violating the written description requirement of 35 U.S.C. § 112, ¶ 1.

**2. Failure to Comply with the Enablement Requirement.**

Synopsys and the Customer Defendants contend that each of the asserted claims of the '432 patent is invalid because the specification does not enable a person of ordinary skill in the art to make and use the claimed invention.

**a. The Invention Is Not Enabling with Respect to the Design of Any and All ASICs.**

The asserted claims of the '432 patent broadly claim "a computer-aided design process for designing an application specific integrated circuit which will perform a desired function." And yet, the only example disclosed in the specification of an ASIC designed using the claimed process is that of a soft drink vending machine controller. ('432 patent, 12:39 to 14:30, Figs. 10-15.) Neither this example nor the remainder of the specification enables a person of ordinary skill in the art to make and

use the claimed invention to design any application specific integrated circuit (ASIC) without undue experimentation.

Importantly, the specification lacks any enabling disclosure as to how timing and synchronization (e.g., clock signals and shift registers) would be reflected in a flowchart or other functional specification input. In illustrating the claimed process in the design of a soft drink vending machine controller, the applicants at best have enabled the invention[1] only with respect to a subset of cases—ASICs that perform simple, asynchronous, Boolean functions. The specification does not enable one of ordinary skill in the art to make and use the claimed invention with an ASIC that must use, for example, clock signals and shift registers.

Nor does the specification provide any enabling disclosure concerning how the claimed process addresses fundamental design constraints like chip speed, power and area. A person of ordinary skill in the art will recognize that tradeoffs in speed, power and area invariably have to be made as part of an ASIC design effort. The specification, however, does not adequately disclose any control rules used by the process for making such design decisions, or any means in the process for interacting with a designer to arrive at such design decisions.

**b. Knowledge Base of Rules Is Not Adequately Disclosed.**

The specification of the '432 patent is not enabling because it does not provide an explanation or disclosure of the expert system rules (including those for cell selection and netlist generation) used by the disclosed CAD system such that a person of ordinary skill in the art would be able to build the expert system knowledge base without undue experimentation. The path synthesizer and cell selector (PSCS) software described in the specification relies on this knowledge base to perform a variety of functions critical to the successful operation of the CAD system. ('432 patent, 2:58-63, 4:63-66, 5:6-8, 5:25-30, 8:21-30.)

In particular, the specification fails to provide sufficient information to allow one of ordinary skill in the art to implement an expert system knowledge base containing the following

[1] Synopsys and the Customer Defendants contend, however, that the specification is also not enabling for other reasons set forth in these disclosures.

information/functions: (1) selection of macros, (2) merging two macros, (3) mapping of macros to cells, (4) merging two cells, and (5) error diagnostics. ('432 patent, 8:65 to 9:5.) The specification also fails to provide sufficient information to allow one of ordinary skill in the art to implement an expert system knowledge base containing the following information/functions: (1) data path synthesis, (2) data path optimization, (3) macro definitions, (4) cell library, and (5) error detection and correction. ('432 patent, 10:1-7.)

To the extent that the '432 patent discloses any information about the rules that are to be contained in the knowledge base, ('432 patent, 10:40 to 11:14, 11:49 to 12:35), that information is wholly inadequate to permit one of ordinary skill in the art to implement a knowledge base capable of selecting cells or of performing other design synthesis tasks without undue experimentation. Indeed, the specification merely points out that the formulation of rules requires both the knowledge of ASIC design experts and the expertise of knowledge engineers. ('432 patent, 10:9-10 & 11:32-36.) One of ordinary skill in the art cannot derive the rules simply by matching up the contents of the macro library with the contents of the cell library. The specification of the '432 patent thus violates the enablement requirement of 35 U.S.C. § 112, ¶ 1.

**c. Logic Synthesis Using a Non-Flowchart Input Is Not Adequately Disclosed.**

The specification of the '432 patent does not provide sufficient description of how a design input that is not in the form of a flowchart is acted on by the disclosed CAD system to produce a synthesized circuit design. The input for the PSCS (path synthesizer/cell selector) program is a "statelist" as shown in Appendix A. ('432 patent, 7:1-3, 8:56-57 & 14:8-29.) This statelist is an intermediate file, derived from a flowchart input using the EDSIM (flowchart editor/flowchart simulator) program. No explanation is provided, nor would such an explanation be apparent to one of ordinary skill in the art, as to how this statelist may be derived from any other input specification besides a flowchart. As a consequence, any claim of the '432 patent that extends to a design input other than a flowchart is not enabled, in violation of 35 U.S.C. § 112, ¶ 1.

**d. Inference Engine Is Not Adequately Disclosed.**

The specification of the '432 patent is not enabling because it does not provide an explanation of the inference engine required by the disclosed CAD system sufficient to allow a person of ordinary skill in the art to build such an engine without undue experimentation. The specification states that the rules interpreted by the engine must include the following features: knowledge representation in the form of a record structure, conditional expressions in the antecedent of a rule, and a facility to create and destroy structure in rule action and other capabilities. ('432 patent, 10:56-67.) It then states that the inference strategy "is based on a fast pattern matching algorithm." ('432 patent, 11:17-20.) The specification does not provide any explanation of how to implement rules in a language with the specified features, and the example rules, ('432 patent, 11:49 to 12:29), do not provide any guidance because they are written in high-level English rather than in the form that they would actually have to take in an operable system.

In addition, the specification fails to describe how contexts are used during the operation of the PSCS software. The specification describes that contexts are required and that there can be context changes. ('432 patent, 10:13-37.) It provides no information, however, about how context changes are made and the relationship between contexts and the particular functions that the specification states are performed by the PSCS software. The specification also prescribes a rule format that includes the context in which a particular rule is active, ('432 patent, 11:1-13), but the example rules do not have any contexts associated with them, ('432 patent, 11:49 to 12:29). As a result, the specification does not provide sufficient information to enable one of ordinary skill in the art to build the claimed invention.

The failure to adequately describe the design of the inference engine may additionally constitute a violation of the written description and/or best mode requirements of 35 U.S.C. § 112. The applicants claimed to have a working copy of the KBSC software that is the subject of the '432 patent but provided insufficient disclosure of the inference engine. The inference engine is implicated in at least the "selecting" step of asserted claim 13, and the "generating" steps of asserted claims 15 and 17.

**e. System Controller Generation Is Not Adequately Disclosed.**

The specification of the '432 patent is not enabling because it does not provide an explanation of how the disclosed CAD system generates a system controller. In order to design an ASIC for performing a desired function, the CAD system must be able to generate a system controller for synchronizing the operations of the different hardware cells. ('432 patent, 1:26-32, 2:40-42, 6:18-27.) This "custom generated" system controller is an essential part of the netlist output of the disclosed CAD system. ('432 patent, 4:39-43, 5:9-13.) Yet, the specification discloses only a controller generator block **33** that supposedly generates controller information to be used by the PSCS program (path synthesizer/cell selector) to generate the netlist. ('432 patent, 5:31-36 & Fig. 3.) No additional information is provided about the controller generator **33** such that a person of ordinary skill in the art would be able to make and use the claimed invention without undue experimentation. Elsewhere, the specification mentions as an "example rule" used by the PSCS program the condition (IF no blocks exist) and the resulting action (THEN generate a system controller). ('432 patent, 11:49-51.) This disclosure is also insufficient to enable one of ordinary skill in the art to build a CAD system that is capable of generating a system controller. The specification of the '432 patent thus violates the enablement requirement of 35 U.S.C. § 112, ¶ 1.

The failure to adequately describe the method used for system controller generation may also constitute a violation of the written description and/or best mode requirements of 35 U.S.C. § 112. The applicants claimed to have a working copy of the KBSC system software that is the subject of the '432 patent, and yet they have provided insufficient disclosure of the system controller generator. System controller generation is part of the claimed invention in claim 17, which claims the additional step of "generating control paths for the selected integrated circuit hardware cells." ('432 patent, 17:8-10.)

**f. No Power or Timing Analysis Is Adequately Disclosed.**

The specification of the '432 patent is not enabling because it does not provide an explanation of how the disclosed CAD system performs a power or timing analysis of the target design. The specification states that power limitations and time delay are important considerations in the cell selection process. ('432 patent, 8:26-30, 8:58-64 & 9:52-61.) Yet, the specification provides no

information as to how the power limitations or timing constraints on a given design are to be established, how the power consumption or timing performance of a design is then calculated, and how power consumption and timing delay are then used in cell selection (for example, in deciding what design trade-offs must be made). Without this critical information, a person of ordinary skill in the art cannot make and use the claimed invention without undue experimentation. The specification of the '432 patent thus violates the enablement requirement of 35 U.S.C. § 112, ¶ 1.

The specification's failure to adequately describe the design of the power or timing analysis engine may additionally constitute a violation of the best mode requirement of 35 U.S.C. § 112, ¶ 1. The applicants claimed to have a working copy of the KBSC system software that is the subject of the '432 patent, but have not provided any disclosure of any power or timing analysis element of that software.

**3. Failure to Comply with the Best Mode Requirement.**

Although disclosure is not required by Patent Local Rule 3-3(d) or otherwise subject to the Patent Local Rules, Synopsys and the Customer Defendants contend that each of the asserted claims of the '432 patent is invalid because the specification fails to set forth the best mode contemplated by the inventors for carrying out the claimed invention.

**a. Best Mode for Selecting Hardware Cells Was Not Disclosed.**

The asserted claims of the '432 patent claim the step of "selecting from said stored data for each of the specified definitions a corresponding integrated circuit hardware cell for performing the desired function of the application specific integrated circuit," which includes "applying to the specified definition of the action or condition to be performed, a set of cell selection rules stored in said expert system knowledge base[.]" ('432 patent, 16:53-59.) The patent does not indicate, however, how the design constraints of speed, power consumption and chip area basic to any application specific integrated circuit are taken into account in the cell selection step. It merely states that information describing the attributes of a hardware cell (e.g., width, height, minimum delay, typical delay, maximum delay, power) can be used in the cell selection process, and that parameters such as delay time allowed and power consumption can be used to map macros to cells. ('432 patent,

9:35-61.) There is no disclosure as to how these design constraints are input into the disclosed CAD system so that they can be used for mapping and selection.

On information and belief, at the time of the application for the '432 patent, January 13, 1988, the inventors contemplated certain steps for entering design constraints into the preferred embodiment of the invention, as detailed in a paper entitled "KBSC: A Knowledge-Based Approach to Automatic Logic Synthesis," *International Journal of Computer Aided VLSI Design* 1, 377-90 (1989), written by the inventors:

> The Cell Selector uses rules to select existing cells from a library to replace functional cells (without geometrical information) used in data-path synthesis. Example procedures for cell selection follow:
>
> Enter design constraints such as speed, power consumption, and chip area.
>
> Select cells that satisfy entered design constraints.
>
> Eliminate unnecessary circuit portions if a selected cell has unused terminal(s).

*Id.* at 383. As this excerpt plainly indicates, the inventors contemplated that a design engineer would be able to enter basic design constraints of speed, power consumption and chip area into the PSCS program before the cell selection step begins.

Nowhere does the specification of the '432 patent disclose the entry of design constraints of speed, power consumption and chip area in the preferred embodiment of the CAD system, or any process of refining and optimizing the resulting design based on these constraints. This omission violated the "best mode" requirement of 35 U.S.C. § 112, ¶ 1, thus rendering the '432 patent invalid.

**b. Best Mode for Generating Mask Data Was Not Disclosed.**

Claim 14 of the '432 patent claims the additional step of "generating from the netlist the mask data required to produce an integrated circuit having the desired function." ('432 patent, 16:66-68.) The patent does not identify any particular method for generating mask data; instead it discloses the use of "any existing VLSI layout and routing tool **16** to create mask data **18** for geometrical layout." ('432 patent, 4:44-46; *see also* 5:40-46 & 14:4-6.)

On information and belief, at the time of the application for the '432 patent, January 13, 1988, the inventors contemplated a preferred method of placement and routing for use with the preferred embodiment of the claimed invention, as detailed in a paper entitled "KBSC: A Knowledge-Based

Approach to Automatic Logic Synthesis," *International Journal of Computer Aided VLSI Design* 1, 377-90 (1989), written by the inventors:

> Layout design is performed in a hierarchical manner. First, highest level cells (functional blocks) are placed on a chip. *An optimum placement is achieved by our floor planner*, based on information such as each block area (transistor count), X/Y dimension ratio, and a netlist between blocks. The floor planner computes relative X/Y coordinates, routing areas between blocks, and information about terminal locations in each block.
>
> After initial placement (floor planning), automatic routing takes place. Our automatic place-route software can handle macrocells with four-sided terminals as well as cells with only upper and lower terminals. Savings of 20% or more of the chip area are achieved by this approach compared with our conventional place-route software for two-sided terminals. To achieve 100% routability, routing area is estimated by heuristics. Extra routing area is eliminated by compaction. Layout of lower-level blocks is performed in a similar manner.

*Id.* at 380 (emphases added). As the article indicates, the inventors contemplated a preferred method of placement and routing using their own proprietary floor planner and place-route software, which achieved optimum placement and 20% or more savings in chip area, respectively, compared to conventional and commercially available layout and routing tools.

Nowhere does the specification of the '432 patent disclose the proprietary floor planner and place-route software preferred by the inventors and considered most appropriate for use with the preferred embodiment. This omission violated the "best mode" requirement of 35 U.S.C. § 112, ¶ 1, thus rendering the '432 patent invalid.

**c. Complete Knowledge Base of Rules NOT ADEQUATELY Disclosed.**

Synopsys and the Customer Defendants are informed and believe that additional rules were known to Kobayashi, Shindo, ICC or Ricoh but not disclosed in the '432 patent specification.

**B. INVALIDITY OF '432 PATENT UNDER 35 U.S.C. § 132.**

Synopsys and the Customer Defendants contend that the asserted claims of the '432 patent are invalid because the insertion of the phrase "architecture independent" violated the statutory prohibition against new matter under 35 U.S.C. § 132. See Section III.A.1.a *supra*.

Dated: April 24, 2006

HOWREY LLP

By: /s/Denise M. De Mory
Denise M. De Mory
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EXHIBIT 2

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**IN THE UNITED STATES DISTRICT COURT**
**NORTHERN DISTRICT OF CALIFORNIA**
**SAN FRANCISCO DIVISION**

| | |
|---|---|
| RICOH COMPANY, LTD,<br><br>Plaintiff,<br><br>vs.<br><br>AEROFLEX ET AL.<br><br>Defendant. | Case No. C03-04669 MJJ (EMC),<br><br>PATENT INFRINGEMENT ACTION<br><br>NOTICE OF SUBPOENA FOR DOCUMENTS AND NOTICE OF DEPOSITION OF DR. YOON-PIN SIMON FOO, PURSUANT TO FED.R.CIV.P. 45 |

TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD:

YOU ARE HEREBY NOTIFIED that, pursuant to Federal Rules of Civil Procedure 45, Plaintiff Ricoh Company, Ltd. ("Plaintiff") has served Dr. Yoon-Pin Simon Foo the attached subpoena for production of documents and deposition testimony.

Dr. Foo is required to produce the documents in his custody, possession, or control specified in Attachment A to the subpoena by 9:30 a.m. on Monday, May 15, 2006, at Florida A&M University - Florida State University, 2525 Pottsdamer Street, A350, Tallahassee, FL 32310.

Plaintiff, by and through their attorneys, will take the deposition of Dr. Foo. The deposition will commence on Friday, May 19, 2006, at 9:30am, at the Courtyard Tallahassee North Hotel, 1972 Raymond Diehl Road, Tallahassee, FL 32308, and will continue from day to day until completed.

The oral examination maybe videotaped and transcribed stenographically, and will take place before an officer who is duly authorized to administer oaths. Plaintiff reserves the right to use the videotape testimony at trial.

Dated: May 3, 2006

Respectfully submitted,

Ricoh Company, Ltd.

By: _____

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Attorneys for Ricoh Company, Ltd.

**Issued by the**
**UNITED STATES DISTRICT COURT**
**NORTHERN DISTRICT OF FLORIDA**

Ricoh Company, Ltd.

Plaintiff

Aeroflex Inc. et al.,

Defendants

## SUBPOENA IN A CIVIL CASE

CASE No:[1] CV-03-4669 MJJ (EMC)
N.DIST OF CALIFORNIA

**TO:** Dr. Yoon-Pin Simon Foo
Florida A&M University - Florida State University
2525 Pottsdamer Street, A350, Tallahassee, FL 32310

Served on:
Howrey LLP
525 Market Street, Suite 3600
San Francisco, CA 94105-2708

☐ YOU ARE COMMANDED to appear in the United States District Court at the place, date, and time specified below to testify in the above case.

| PLACE OF TESTIMONY | COURTROOM |
|---|---|
| | DATE AND TIME |

☒ YOU ARE COMMANDED to appear at the place, date, and time specified below to testify at the taking of a deposition in the above case.

| PLACE OF DEPOSITION: | DATE AND TIME |
|---|---|
| Courtyard Tallahassee North Hotel<br>1972 Raymond Diehl Road, Tallahassee, FL 32308<br>Phone:850-422-0600 | May 19, 2006<br>9:30 am |

☒ YOU ARE COMMANDED to produce and permit inspection and copying of the following documents or objects at the place, date, and time specified below (list documents or objects):

See Attachment A (Documents to be Produced)

| PLACE | DATE AND TIME |
|---|---|
| Department of Electrical & Computer Engineering<br>Florida A&M University - Florida State University ,<br>2525 Pottsdamer Street, A350, Tallahassee, FL 32310 | May 15, 2006<br>9:30am |

☐ YOU ARE COMMANDED to permit inspection of the following premises at the date and time specified below:

| PREMISES | DATE AND TIME |
|---|---|
| | |

Any organization not a party to this suit that is subpoenaed for the taking of a deposition shall designate one or more officers, directors, or managing agents, or other persons who consent to testify on its behalf, and may set forth, for each person designated, the matters on which the person will testify. Federal Rules of Civil Procedure, 30(b)(6).

| ISSUING OFFICER SIGNATURE AND TITLE (INDICATE IF ATTORNEY FOR PLAINTIFF OR DEFENDANT) | DATE |
|---|---|
| Attorney for Plaintiff | May 3, 2006 |

ISSUING OFFICER'S NAME, ADDRESS AND PHONE NUMBER
Kenneth W. Brothers, Esq. Dickstein Shapiro Morin & Oshinsky LLP, 2101 L Street, NW, Washington, DC 20037
Ph (202) 785-9700

[1] If action is pending in district other than district of Issuance, state district under case number.

**PROOF OF SERVICE**

| | DATE | PLACE |
|---|---|---|
| SERVED | | |
| SERVED ON (PRINT NAME) | | MANNER OF SERVICE |
| SERVED BY (PRINT NAME) | | TITLE |

**DECLARATION OF SERVER**

I declare under penalty of perjury under the laws of the United States of America that the foregoing information contained in the Proof of Service is true and correct.

Executed on _____
DATE

_____
SIGNATURE OF SERVER

_____
ADDRESS OF SERVER

**Rule 45, Federal Rules of Civil Procedure, Parts C & D:**

(c) PROTECTION OF PERSONS SUBJECT TO SUBPOENAS.

(1) A party or an attorney responsible of the issuance and service of a subpoena shall take reasonable steps to avoid imposing undue burden or expense on a person subject to that subpoena. The court on behalf of which the subpoena was issued shall enforce this duty and impose upon the party or attorney in breach of this duty an appropriate sanction, which may include, but is not limited to, lost earnings and a reasonable attorney's fee.

(2)(A) A person commanded to produce and permit inspection and copying of designated books, papers, documents, or tangible things, or inspection of premises need not appear in person at the place of production or inspection unless commanded to appear for deposition, hearing or trial.

(B) Subject paragraph (d)(2) of this rule, a person commanded to produce and permit inspection and copying may, within 14 days after service of the subpoena or before the time specified for compliance if such time is less than 14 days after service, serve upon the party or attorney designated in the subpoena written objection to inspection or copying of any or all of the designated materials or of the premises. If objection is made, the party serving the subpoena shall not be entitled to inspect and copy the materials or inspect the premises except pursuant to an order of the court by which the subpoena was issued. If objection has been made, the party serving the subpoena may, upon notice to the person commanded to produce, move at any time for an order to compel the production. Such an order to compel production shall protect any person who is not a party or an officer of a party from significant expense resulting from the inspection and copying commanded.

(3)(A) On timely motion the court by which a subpoena was issued shall quash or modify the subpoena if it

(i) fails to allow reasonable time for compliance;

(ii) requires a person who is not a party or an officer of a party to travel to a place more than 100 miles from the place where that person resides, is employed or regularly transacts businesses in person, except that, subject to the provisions of clause (c)(3)(B)(iii) of this rule, such a person may in order to attend trial be commanded to travel from any such place within the state in which the trial is held, or

(iii) requires disclosure of privileged or other protected matter and no exception or waiver applies, or

(iv) subjects a person to undue burden.

(B) If a subpoena

(i) requires disclosure of a trade secret or other confidential research, development or commercial information, or

(ii) requires disclosure of an unretained expert's opinion or information not describing specific events or occurrences in dispute and resulting from the expert's study made not at the request of any party, or

(iii) requires a person who is not a party or an officer of a party to incur substantial expenses to travel more than 100 miles to attend trial, the court may, to protect a person subject to or affected by the subpoena, quash or modify the subpoena or, if the party in whose behalf the subpoena is issued shows a substantial need for the testimony or material that cannot be otherwise met without undue hardship and assures that the person to whom the subpoena is addressed will be reasonably compensated, the court may order appearance or production only upon specified conditions.

(d) DUTIES IN RESPONDING TO SUBPOENA.

(1) A person responding to a subpoena to produce documents shall produce them as they are kept in the usual course of business or shall organize and label them to correspond with the categories in the demand.

(2) When information subject to a subpoena is withheld on a claim that is privileged or subject to protection as trial preparation materials, the claim shall be made expressly and shall be supported by a description of the nature of the documents, communications, or things not produced that is sufficient to enable the demanding party to contest the claim.

**ATTACHMENT A**

**DEFINITIONS**

a) **You/Your.** The term "you" or "your" in this paper means Dr. Yoon-Pin Simon Foo.

b) **Communication.** The term "communication" means the transmittal of information (in the form of facts, ideas, inquiries or otherwise).

c) **Document.** The term "document" is defined to be synonymous in meaning and equal in scope to the usage of this term in Federal Rule of Civil Procedure 34(a), including, without limitation, electronic or computerized data or data compilations. A draft or non-identical copy is a separate document within the meaning of this term. This term shall include, without limitation, the following items, whether printed or reproduced by any process, or written or produced by hand or stored in computer memory, magnetic or hard disk or other data storage medium, and whether or not claimed to be privileged, confidential or otherwise excludable from discovery, namely, notes, letters, correspondence, communications, facsimiles, e-mails, telegrams, memoranda, summaries or records of telephone conversations, or meetings, diaries, reports, laboratory and research reports and notebooks, recorded experiments, charts, plans, drawings, diagrams, schematic diagrams, illustrations, product descriptions, product analyses, requests for proposal, documents related to proposed or actual product improvements or changes, users manuals or guides, installation guides or manuals, technical descriptions or specifications, product repair manuals or guides, photographs, video images, software flow charts or descriptions or specifications, product functional descriptions or specifications, minutes or records of meetings, summaries of interviews reports or appraisals, opinions of counsel, agreements, reports or summaries of negotiation, brochures, pamphlets, advertisements, circulars, trade letters, press releases,

draft of documents and all other material fixed in a tangible medium of whatever kind known to you or in your possession or control.

d) **Synopsys, Inc.** The term "Synopsys, Inc." as well as its abbreviated name (e.g., "Synopsys") or a pronoun referring to the foregoing means the Delaware corporation known as Synopsys, Inc. and having place of business at 700 E. Middlefield Road, Mountain View, California, and, where applicable, its officers, directors, employees, agents, independent contractors, partners, corporate parent, subsidiaries or affiliates.

e) **ASIC Defendants.** The terms "ASIC Defendants" means Aeroflex Incorporated, AMI Semiconductor, Inc., Matrox Electronic Systems Ltd., Matrox Graphics Inc., Matrox International Corp., Matrox Tech, Inc. and Aeroflex Colorado Springs, Inc. and, where applicable, their officers, directors, employees, agents, independent contractors, partners, corporate parent, subsidiaries or affiliates. A reference to an individual ASIC Defendant's full or abbreviated name or a pronoun means the individual company. Where the listed subject area is not related or limited to a specific named ASIC Defendant, the listed subject area shall be construed as seeking knowledge and information concerning any and all of the ASIC Defendants named in this action.

f) **Person.** The term "person" is defined as any natural person or any business, legal or governmental entity or association.

g) **Concerning.** The term "concerning" means relating to, referring to, describing, evidencing or constituting.

h) **All/Each.** The terms "all" and "each" shall be construed as all and each.

i) **And/Or.** The connectives "and" and "or" shall be construed either disjunctively or conjunctively as necessary to bring within the scope of discovery all that might otherwise be construed to be outside of its scope.

j) **Number.** The use of the singular form of any word includes the plural and vice versa.

k) **'432 Patent.** As used herein, the "'432 patent" refers to United States Letters Patent Number 4,922,432.

l) **Patent-in-suit.** As used herein, "patents-in-suit" refers to the '432 patent.

m) **Limitations.** Each listed subject area shall be construed independently and no listed subject area shall limit the scope of any other listed subject area.

## INSTRUCTIONS

1. Unless otherwise noted, this set of demands requires the production of documents or tangible things that were prepared, created, written, sent, dated or received at any time up to the present.

2. You shall produce documents as they are kept in the usual course of business or shall organize and label the documents to correspond with the categories in the document request.

3. If you withhold any documents or tangible things under a claim of privilege, please furnish with the response to these demands a privilege and/or redaction log identifying each document or tangible thing for which privilege is claimed, including the following information:

a. The date, sender, recipient, and subject matter of the document or tangible thing;

b. The basis upon which privilege is claimed; and

c. The paragraphs, paragraph or subparts of the demand to which the document or tangible thing corresponds.

4. These requests are continuing and impose on Dr. Foo the obligations set forth in Rule 26(e) of the Federal Rules of Civil Procedure.

## DOCUMENTS AND THINGS TO BE PRODUCED

**REQUEST FOR PRODUCTION NO. 1:**

All documents and things related to the design, development and operation of the system and/or processes described in attached Exhibits A and B, and the Hand-Sketched Diagram of "A Knowledge-Based Silicon Compiler" referenced in attached Exhibit C, including all documents and things related to the conception and reduction to practice of the system and/or processes.

**REQUEST FOR PRODUCTION NO. 2:**

All documents and things related to the system and/or processes described in your Masters Thesis entitled "Managing VLSI Design Data with a Relational Database System", including but not limited to a copy of that document.

**REQUEST FOR PRODUCTION NO. 3:**

All documents and things related to the design, development and operation of the '432 patent (attached hereto as Exhibit D), including all documents and things related to the conception and reduction to practice of the system and/or processes described in the '432 patent.

**REQUEST FOR PRODUCTION NO. 4:**

All documents and things relating to communications between you and Synopsys or any of the ASIC Defendants.

**REQUEST FOR PRODUCTION NO. 5:**

All documents and things relating to communications between you and counsel for Synopsys or any of the ASIC Defendants.

**REQUEST FOR PRODUCTION NO. 6:**

All documents concerning your experience in the field of logic synthesis design between 1980 and 1990.

**REQUEST FOR PRODUCTION NO. 7:**

All documents, including a list of all publications, authored by you between 1980 and 1990.

EXHIBIT 3

HOWREY LLP

525 Market Street
Suite 3600
San Francisco, CA 94105-2708
T 415.848.4900
F 415.848.4999
www.howrey.com

May 19, 2006

DIRECT DIAL 415.848.4970
FILE 068160.0061.000000

VIA FEDERAL EXPRESS OVERNIGHT

Kenneth W. Brothers, Esq.
DICKSTEIN, SHAPIRO, MORIN & OSHINSKY, LLP
2101 L Street NW
Washington, DC 20037

Re: Ricoh v. Aeroflex, et al.

Dear Mr. Brothers:

Please find enclosed the Simon Foo privilege log, as well as hard copies and one (1) production disk, both containing the following Bates numbers on behalf of Simon Foo (FOO):

| CD Title | Bates Range | Number of CD's |
|---|---|---|
| FOO_002 | FOO 000408-FOO 000420 | 1 |

Please note that pursuant to the protective order this production is labeled "CONFIDENTIAL".

Should you have any questions or comments, please do not hesitate to contact me.

Sincerely,

Aurora L. Hartwig
Litigation Paralegal

ALH:alh
Enclosures

Cc: Gary Hoffman (via E-mail w/o enclosures)
DeAnna Allen (via E-mail w/o enclosures)
Eric Oliver (via E-mail w/o enclosures))
Edward Meilman (via E-mail w/o enclosures)
Michael Weinstein (via E-mail w/o enclosures)
Douglas McCandless (via E-mail w/o enclosures)

# *PRIVILEGE LOG OF SIMON FOO*

| | FROM | TO | CC | DATE(S) | DESCRIPTION | ASSERTED PRIVILEGE |
|---|---|---|---|---|---|---|
| **1.** | Jacky Fink, Esq. | Simon Foo | Henry Su, Esq.; Denise De Mory, Esq. | 4/12/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **2.** | Simon Foo | Henry Su, Esq. | Jacky Fink, Esq.; Denise De Mory, Esq. | 4/12/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **3.** | Simon Foo | Henry Su, Esq. | Jacky, Fink Esq.; Denise De Mory, Esq. | 4/13/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **4.** | Simon Foo | Tracy Gibbs; Henry Su, Esq.; Jacky Fink, Esq. | | 4/18/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **5.** | Simon Foo | Henry Su, Esq. | Tracy Gibbs; Jacky Fink, Esq. | 4/19/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **6.** | Simon Foo | Henry Su, Esq. | Jacky Fink, Esq. | 4/19/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **7.** | Henry Su, Esq. | Simon Foo | | 4/21/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **8.** | Simon Foo | Henry Su, Esq. | | 4/21/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **9.** | Henry Su, Esq. | Simon Foo | | 4/21/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **10.** | Simon Foo | Henry Su, Esq. | Jacky Fink, Esq. | 4/23/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |

| | FROM | TO | CC | DATE(S) | DESCRIPTION | ASSERTED PRIVILEGE |
|---|---|---|---|---|---|---|
| **11.** | Henry Su, Esq. | Simon Foo | Jacky Fink, Esq. | 4/23/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **12.** | Simon Foo | Henry Su, Esq. | Jacky Fink, Esq. | 4/23/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **13.** | Henry Su, Esq. | Simon Foo | Jacky Fink, Esq. | 4/23/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **14.** | Henry Su, Esq. | Simon Foo | | 4/24/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **15.** | Simon Foo | Henry Su, Esq. | | 4/26/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **16.** | Simon Foo | Henry Su, Esq. | | 4/27/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **17.** | Simon Foo | Henry Su, Esq. | | 4/27/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **18.** | Simon Foo | Yoshiyasu Takefuji | Henry Su, Esq. | 5/1/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **19.** | Henry Su, Esq. | Simon Foo | | 5/1/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **20.** | Tracy Gibbs | Simon Foo | Henry Su, Esq. | 5/3/2006 | Confidential attorney-client e-mail communication regarding representation for responding to Ricoh subpoena | AC/WP |
| **21.** | Simon Foo | Henry Su, Esq. | | 5/4/2006 | Confidential attorney-client e-mail communication regarding representation for responding to Ricoh subpoena | AC/WP |
| **22.** | Henry Su, Esq. | Simon Foo | | 5/4/2006 | Confidential attorney-client e-mail communication regarding representation for responding to Ricoh subpoena | AC/WP |

| | FROM | TO | CC | DATE(S) | DESCRIPTION | ASSERTED PRIVILEGE |
|---|---|---|---|---|---|---|
| **23.** | Simon Foo | Jacky Fink, Esq. | Henry Su, Esq.; Simon Foo | 5/5/2006 | E-mail reflecting litigation strategy of Howrey attorneys | WP |
| **24.** | Simon Foo | Henry Su, Esq. | | 5/11/2006 | Confidential attorney-client e-mail communication regarding representation for responding to Ricoh subpoena | AC/WP |
| **25.** | Simon Foo | Henry Su, Esq. | Tracy Gibbs | 5/12/2006 | Confidential attorney-client e-mail communication regarding representation for responding to Ricoh subpoena | AC/WP |
| **26.** | Henry Su, Esq. | Simon Foo | | 5/12/2006 | Confidential attorney-client e-mail communication regarding representation for responding to Ricoh subpoena | AC/WP |
| **27.** | Simon Foo | Henry Su, Esq. | | 5/12/2006 | Confidential attorney-client e-mail communication regarding representation for responding to Ricoh subpoena | AC/WP |
| **28.** | Henry Su, Esq. | Simon Foo | Henry Su, Esq.; Denise De Mory, Esq. | 5/12/2006 | Confidential attorney-client e-mail communication regarding representation for responding to Ricoh subpoena | AC/WP |

EXHIBIT 4

DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP
*2101 L Street NW • Washington, DC 20037-1526*
*Tel (202) 785-9700 • Fax (202) 887-0689*
*Writer's Direct Dial: (202) 429-2184*
*E-Mail Address: BrothersK@dsmo.com*

May 22, 2006

**Via PDF**

Denise DeMory, Esq.
Howrey LLP
525 Market Street, Suite 3600
San Francisco, CA 94105-2708

Re: Ricoh v. Aeroflex, et al.
Synopsys v. Ricoh

Dear Denise:

We are in receipt of your May 19 production of a privilege log relating to Dr. Foo. Dr. Foo has not been disclosed as a litigation consultant by you; the log does not refer to any such consultation relationship; and according to your privilege log, the earliest that you agreed to represent him was on May 3. Thus, you may not claim any privilege over communications with Dr. Foo prior to May 3. Your communications with Dr. Foo are fully discoverable. Please immediately produce all such communications.

Sincerely,

Kenneth W. Brothers

cc: Howrey distribution list

EXHIBIT 5

HOWREY LLP

525 Market Street
Suite 3600
San Francisco, CA 94105-2708
www.howrey.com

**Denise M. De Mory**
Partner
T 415.848.4983
F 415.848.4999
demoryd@howrey.com
File 06816.0060.000000

May 23, 2006

**VIA PDF**

Kenneth W. Brothers, Esq.
Dickstein Shapiro Morin & Oshinsky LLP
2101 L Street, N.W.
Washington, DC 20037-1526

**Re:** ***Synopsys v. Ricoh Company, Ltd.*,**
**Case No. C03-2289 MJJ (EMC)**
***Ricoh Company, Ltd. v. Aeroflex, Inc., et al.*,**
**Case No. C03-4669 MJJ (EMC)**

Dear Ken:

I write in response to your letter regarding the Foo privilege log. We had no obligation to identify Dr. Foo as a consultant. Thus, any claimed failure to notify you is irrelevant to any claim of privilege. In addition, when the retention agreement was executed is not controlling either. We have properly asserted privilege with regard to all logged communications and will not be producing any additional documents.

Very truly yours,

Denise M. De Mory

cc: Gary Hoffman, Esq.
Edward Meilman, Esq.
Eric Oliver, Esq.
DeAnna Allen, Esq.
Michael Weinstein, Esq.
Rebecca Barbisch, Esq.
Seymour Seyoum

EXHIBIT 6

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

SYNOPSYS, INC.,
Plaintiff,
vs. NO: CO3-2289 MJJ (EMC)

RICOH COMPANY, LTD.,
Defendant.
/

**TRAVEL TRANSCRIPT**

RICOH COMPANY, LTD.,
Plaintiff,
vs. NO: CO3-04669 MJJ (EMC)

AEROFLEX INCORPORATED, AMI SEMICONDUCTOR, INC., MATROX ELECTRONIC SYSTEMS, LTD., MATROX GRAPHICS, INC., MATROX INTERNATIONAL CORP. and MATROX TECH., INC.,
Defendants.
/

THE DEPOSITION OF: SIMON YOON-PIN FOO

AT THE INSTANCE OF: Ricoh Company, Ltd.

DATE: Wednesday, May 31, 2006

TIME: Commenced at 9:28 a.m.
Terminated at 4:30 p.m.

PLACE: Marriott Courtyard
Apalachee Parkway
Tallahassee, Florida

REPORTED BY: SARAH B. GILROY, RPR, CRR
Notary Public the State of
Florida at Large

APPEARANCES

REPRESENTING SYNOPSYS, INC.:

HENRY C. SU, ESQUIRE
Howrey LLP
1950 University Avenue, 4th Floor
East Palo Alto, California 94303

REPRESENTING RICOH COMPANY, LTD.:

ERIC OLIVER, ESQUIRE
Dickstein, Shapiro, Morin & Oshinsky
2101 L Street NW
Washington, DC 20037



INDEX





Thereupon,
SIMON YOON-PIN FOO
was called as a witness, having been first duly sworn, was examined and testified as follows:
DIRECT EXAMINATION
BY MR. OLIVER:

**Q Good morning.**
A Good morning.
**Q Would you please state your full name for the record.**
A Simon Yoon-Pin Foo.
**Q Would you state your current residence address.**
A 6239 Middlewood Court, Tallahassee, Florida 32312.
**Q Handing you what has been marked as Exhibit 500, bearing production numbers FOO 00001 through 0008. Do you recognize Exhibit 500?**
A Yes.
**Q What is it?**
A It's my vitae.
(Exhibit No. 500 was identified for the record).
BY MR. OLIVER:
**Q Did you prepare it?**



A Yes, sir.
**Q When did you prepare it?**
A This vitae was probably prepared in early 2006.
**Q Is there anything you would add if you were to update it today?**
A To the best of my knowledge, no.
**Q Are there any errors that you would correct?**
A To the best of my knowledge, no.
**Q Did you intentionally leave off any publications?**
A Could you repeat that question again?
**Q Did you intentionally leave off any publications?**
A No, sir.
**Q Where did you do your undergraduate work?**
A The University of South Carolina in Columbia.
**Q Did you have any significant projects towards your degree?**
MR. SU: Objection as to form.
A Could you elaborate -- which degree are you referring to, sir?
BY MR. OLIVER:
**Q Your undergraduate degree.**
A Oh, the undergraduate degree. I -- to the

Page 6

best of my knowledge, for two or three semesters, starting in 1982, I worked as a student research assistant with Dr. Kobayashi

**Q Do you remember what you did in that 1982 time frame with Dr. Kobayashi?**

A Could you elaborate that question?

**Q Do you remember what you did as a student researcher in 1982 with Dr. Kobayashi?**

A I was a research assistant for him, and my task was to assist him in research in the area of integrated circuits.

**Q Anything in particular with respect to integrated circuits?**

A In particularly logic design, circuit design, literature search, writing of technical papers, and I think that's pretty much the work that I did for him, to the best of my knowledge.

**Q And all of that was during that time period in 1982; is that correct?**

A Between 1982 and 1983, as an undergraduate research assistant.

**Q How did you meet Dr. Kobayashi?**

A I was recruited by him, because at that time I was one of the honor students in electrical engineering department.

Page 7

**Q Did you have any specialties at that time?**

A Yes.

**Q What was your specialty?**

A Digital logic design, and I was particularly interested in integrated circuit design.

**Q Did Dr. Kobayashi teach any of your undergraduate courses?**

A Can I -- can you say that question again.

**Q Did Dr. Kobayashi teach any of your undergraduate courses?**

A I believe I took the digital logic design under him.

**Q Do you remember what year?**

A I believe it was either 1981 or 1982.

**Q Was Dr. Kobayashi your advisor when you were working towards your master's degree?**

A Yes, sir.

**Q When did he start being your advisor?**

A He was already my advisor when I was a student, research assistant when I was an undergraduate.

**Q What does it mean to be an advisor?**

A He basically mentor me. He guide me in the area of graduate education.

**Q What do you mean by guiding you in the area of graduate education?**

A Telling me which courses to take, advising me -- advising me on courses to take.

**Q Did you have a master's thesis?**

A Yes, sir.

**Q What was your master's thesis?**

A The title?

**Q (Nodding head affirmatively).**

A It's called managing -- "Managing the VLSI CAD Data With a Relational Database System," I believe, to the best of my knowledge. I would be happy to look at my -- maybe I did not specify in my vitae what the title is.

**Q Was it called managing VLSI --**

A Yeah, VLSI CAD data with a relational database, something like that.

**Q Did Dr. Kobayashi provide you with the idea for your thesis?**

A No.

**Q Who did?**

A The idea of using a relational database system to manage VLSI data actually came from a course that I took with Professor Ronald Bonnell.

**Q Who is Dr. Bonnell?**

A Dr. Bonnell teaches the database engineering course, which I took when I was a graduate student.

**Q Do you remember what year you took that course?**

A I believe it was in 1983, late in '83 or early '84.

**Q Did Dr. Kobayashi advise you with respect to your thesis?**

A Yes, sir.

**Q How did he advise you?**

A He advise me in terms of what courses I needed to complete my degree, and he also advised me on the topic.

**Q How did he advise you on the topic?**

A What would be a good topic, a relevant topic at that time.

**Q What do you mean by "relevant topic at that time"?**

A Something that is not out of date.

**Q Did you need help in that regard?**

A Say that --

MR. SU: Object to form.

BY MR. OLIVER:

**Q Did you need help in that regard?**

A No.

**Q But he gave you advice; right?**

Page 10

A Yes, sir.
**Q Did he give you any other assistance in your master's thesis?**
A He corrected some of my writing, and I believe that's about it.
**Q Did he provide you with any design examples?**
MR. SU: Objection as to form.
A Which design example are you referring to?
BY MR. OLIVER.
**Q You have a design example in your master's called the "Programmable Logic For Parallel Convolution"?**
A I don't recall --
**Q Would you like to see a copy of your master's to refresh your recollection?**
A I guess my response is that I don't recall how much he assisted me in developing that example.
**Q Do you have any doubt that he assisted you in some respect?**
A He may have assisted me in some respect, but I'm the one who implemented the design example.
**Q What do you mean "implemented the design example"?**
A In other words, I started from the conceptual design and completed a whole process to the integrated

Page 11

circuit description at the mask level.
**Q Did you coauthor a paper with Dr. Kobayashi regarding programmable logic for parallel convolution?**
A Yes, sir.
**Q Was that paper based on your work?**
A Can I look at a paper for details, please?
**Q Handing you what has been marked as Exhibit 501, bearing production numbers KBSC 00918 through 0922. This is a document entitled "Programmable Logic For Parallel Convolution." Would you take a moment to review that Exhibit 501, please.**
**(Exhibit No. 501 was identified for the record).**
A (Witness complies). Okay.
BY MR. OLIVER:
**Q Was Exhibit 501 based on your work?**
A Which work are you referring to, sir?
**Q Any work.**
A Yes, sir.
**Q Was Exhibit 501 based on Dr. Kobayashi's work?**
A Not entirely.
**Q In any respect?**
A It was our work.
**Q You did it jointly?**
A That's correct.

Page 12

**Q Who had the underlying idea for Exhibit 501?**
A When you say "underlying idea," what do you mean?
**Q The primary idea behind writing the paper.**
MR. SU: Objection as to form.
A Are you talking about the person who wrote the whole paper?
BY MR. OLIVER:
**Q No. I'm asking you about the underlying idea of the paper.**
A Are you referring to who came up with the title of the paper?
**Q Only if the title reflects the idea behind the paper.**
A Again, like I mentioned earlier, it was our paper. We work together.
**Q Do you believe you came up with the idea together?**
A Possibly.
**Q Do you know for sure?**
A It's been over 20 years. I do not recall the, you know, the actual conversation that led to this paper. But at that time I was working with him.
**Q Whose idea was it to publish this paper?**
A It was Kobayashi's idea.

Page 13

**Q Do you know why he listed you as a coauthor?**
A Because I assisted in the -- either the idea of the paper or writing of the paper or both.
**Q Has he ever omitted you from a paper that he has published when you had either the idea of the paper or writing of the paper?**
A Say that again.
**Q Has Dr. Kobayashi ever omitted you from a published paper when you had either assisted in the idea of the paper or in the writing of the paper or both?**
A Possibly.
**Q Do you know for a fact?**
A I believe there were one presentation that he has made but my name was not -- was omitted.
**Q Do you know what presentation that was?**
A I believe, to the best of my recollection, he -- Dr. Kobayashi has presented a talk at Greenville, South Carolina that was very much my work.
**Q Did that talk -- strike that. Did that talk result in a published paper?**
A I do not recall that.
**Q Have there been any other papers which you believe Dr. Kobayashi omitted you from the paper?**
A To the best of my knowledge, I do not know.

**Q How did you learn of that Greenville, South Carolina presentation that you spoke about in your previous answer?**
A I believe I have seen it somewhere, either on the Internet or in some other forum.
**Q When did you first see it?**
A I believe it was recently.
**Q When you say "recently," what do you mean?**
A Within a month.
**Q Is that the first time you saw it?**
A Yes, sir.
**Q How did you feel when you saw it?**
A I was flabbergasted.
**Q Why?**
A Because the description was taken out of my work, and I was not given credit.
**Q Was there any part of that paper that could only be attributed to Dr. Kobayashi?**
A Say that again.
**Q Was there any part of that paper that could only be attributed to Dr. Kobayashi?**
A No.
**Q Nothing?**
A I would not say nothing. I would not say, you know, entirely my, you know, presentation But it is



possible that he could paraphrase it.
**Q What do you mean, "he could paraphrase it"?**
A For example, a description could be, you know, describing a number of ways. He could, you know, by his word, you know, describe in another form. But it's also basically the same idea.
**Q Do you believe it was your idea alone?**
A I would not say entirely my idea alone. But I definitely played a big role in it.
**Q What role did you play?**
A I developed the program for it, and I came up with the original idea for it
**Q Did you try to contact Dr. Kobayashi once you learned of this presentation or paper?**
A No, sir.
**Q What did you do after you learned of this paper?**
A I did nothing.
**Q How did you find this paper?**
A It is off the Internet, to the best of my recollection.
**Q Did you find it off the Internet?**
A Say that again.
**Q Did you find it off of the Internet?**
A Did I find off the Internet?



**Q Yes.**
A I believe I did.
**Q Were you doing any searches to try to find it?**
A Yes, sir.
**Q Why were you doing those searches?**
A Why was I doing the search's?
**Q Yes.**
A I was -- I wanted to know what's out there.
**Q Why?**
A That, you know, my idea, I wanted to see how -- if anybody has taken my idea and published it.
**Q How old is that idea?**
A How old is that idea?
**Q (Nodding head affirmatively).**
A This idea was back in -- it started back in -- can I ask you to clarify the idea? What idea are you talking about?
**Q I don't know. You talked about the idea for several minutes now. So whatever idea that you're talking about that you were searching for.**
A The idea that I'm referring to is the cell selection.
**Q I don't remember seeing any recent articles by you in the past 15 or so years on cell selection; is that true?**



A That's correct.
**Q So why is it just recently that you're interested in doing research on cell selection?**
A After I was contacted by your attorneys regarding the patent, the 432 patent, I -- that got me interested.
**Q Did you review the 432 patent?**
A Yes, sir.
**Q Were you flabbergasted when you saw the 432 patent?**
A Absolutely.
**Q Why is that?**
A Because a number of the parts of the patent talks about the work that I did.
**Q Are you doing any consulting work for any parties in this litigation?**
A Say that again.
**Q Are you doing any consulting work for any parties in this litigation?**
A What do you mean by "consulting work"?
**Q Are you being paid to review or discuss any matters with anyone connected with this litigation?**
A Yes, sir.
**Q Who are you working for?**
A I'm a consultant for Howrey.

Page 18

**Q How much are you being paid?**
A Are you talking about hourly rate?
**Q I don't -- however you're being compensated for your consulting work.**
A I'm being compensated for the number of hours I put in.
**Q What is your hourly rate?**
A $250 an hour.
**Q Are you being compensated for today's deposition?**
A I believe so.
**Q How much have you billed Howrey for consulting services in this litigation so far to date?**
A To date --
MR. SU: I'm going to object to that as work product. We've not identified him as a testifying expert
MR. OLIVER: Work product?
MR. SU: Yes.
MR. OLIVER: His hourly rate.
MR. SU: No. He just testified as to his hourly rate. You want to know now how many hours he's billed.
MR. OLIVER: Are you going to instruct him not to answer the question?

Page 19

MR. SU: Yes.
BY MR. OLIVER:
**Q Are you going to answer the question?**
A No.
**Q Why not?**
A By advice from my counsel.
**Q When did you start working as a consultant for Howrey?**
A I started in, I believe, to the best of my knowledge, in middle of April 2006.
**Q Who first approached you about being a consultant?**
MR. SU: Objection, work product.
BY MR. OLIVER:
**Q I'm just asking you for the name of the person who approached you.**
A I believe is Jackie Fink of Howrey.
**Q Do you know when she first approached you?**
A I believe early April, to the best of my knowledge.
**Q You made a reference to discussing attorney from my firm, which I assume you are referring to Dickstein, Shapiro; do you remember that?**
A Yes, sir.
**Q What were you referring to?**

Page 20

A There was one person from Shapiro, Weinstein law firm that contacted me.
**Q When did he contact you?**
A I believe, to the best of my recollection, the person contacted me in either 2002 or early 2003.
**Q Did you sign a nondisclosure agreement?**
A That was not mentioned in the conversation.
**Q Do you remember the conversation being under some understanding of confidentiality?**
A That was not mentioned.
**Q Did you reveal any of your discussions with Mr. Weinstein to anyone at Howrey?**
A No, sir.
**Q How much time did you spend preparing for your deposition today?**
A Are you talking about this morning?
**Q For your -- in preparation for today's deposition.**
A Okay. Yesterday I spent about three hours.
**Q What did you do in those three hours?**
A I reviewed the evidence or documents that I have provided to my counsel.
**Q Did you speak with anyone in preparation of today's deposition?**
A No other person other than my counsel.

Page 21

**Q Who did you speak with?**
A I spoke with Mr. Su.
**Q Anyone else?**
A Nobody else.
**Q You didn't speak with Jackie Fink?**
A No, sir.
**Q Were you given a retainer to be a consultant for Howrey?**
A Could you explain that retainer.
**Q Were you given a payment in advance?**
A No, sir.
**Q Are you being represented by counsel today?**
A Yes, sir.
**Q Mr. Su your counsel?**
A That's correct.
**Q When did he become your counsel?**
A I believe Mr. Su became my counsel in the middle or early part of May.
**Q Why did you retain counsel?**
A The reason was, I was subpoenaed.
**Q Have you done any research with respect to rule-based systems?**
A Yes, sir.
**Q What type of research have you done?**
A I have done some research on rule-based system

Page 22

as part of some course work that I took when I was a graduate student at the University of South Carolina.
**Q Do you remember what year?**
A To the best of my knowledge, it was in 1983 and 1984.
**Q Do you remember how many courses were involved with this rule-based system research?**
A Say that question again.
**Q Do you remember how many courses you took with respect to the rule-based system research?**
A I would say approximately four or five graduate courses.
**Q Do you know who taught those courses?**
A The two or three that were taught by Professor Bonnell, and one by Michael Huens (phonetic) and one by Larry Stephens, and possibly more professors
**Q Did your research involve the use of rule-based systems in VLSI design?**
A Yes, sir.
**Q Is that when you first learned of rule-based systems in VLSI design?**
A Say that again.
**Q Is that when you first learned of rule-based systems in VLSI design?**
MR. SU: Objection to form.

Page 23

A No, sir.
BY MR. OLIVER:
**Q When is the first time you learned of rule-based systems in VLSI design?**
A That idea probably came from a course or a number of courses that I took in the area of VLSI design
**Q When did you take those courses?**
A Also in early or late 1983 and 1984.
**Q How many courses did you take in that respect?**
A When you say "in that respect," are you referring to VLSI design?
**Q Rule-based systems in VLSI design.**
A Let me --
**Q Strike that. How many courses involving VLSI design did you take that introduced you to the idea of rule-based systems?**
A Well let me say one thing. The VLSI design that I took did not -- has no mention about rule-based design The idea of a rule-based systems for VLSI design is a research idea. The VLSI design course and the rule-based system course are two separate courses.
**Q Did the rule-based system courses involve VLSI design?**
A No, sir.

Page 24

**Q Do you believe you came up with the idea of using rule-based systems for VLSI design?**
A To the best of my knowledge, yes. However, there may be other researchers in other universities who are doing the same similar thing. That I don't know.
**Q When did you come up with the idea of using rule-based systems in VLSI design?**
A That was during a class project that I had to complete for the rule-based system course.
**Q What class project was that?**
A At the -- there was a course that is taught by Professor Bonnell that require a class project. It is in this class project that I use -- that I decided to use the VLSI design as an application.
**Q Did you produce any of your project notes in this litigation?**
A Yes, sir.
**Q Did you produce a paper?**
A Yes, sir.
**Q What was the name of the paper?**
A Actually a number of papers. The two papers that I know of is -- one is the "Knowledge-Based System For VLSI Module Selection."
**Q Are you referring to Exhibit 500, which is**

Page 25

**your CV?**
A That's correct, sir.
**Q What page are you referring to?**
A I am referring to page seven, at the bottom of page seven and then at the top of page eight, the paper titled, "A Framework For Managing VLSI CAD Data."
**Q These papers that you refer to are coauthored by Dr. Kobayashi?**
A That's correct.
**Q Didn't you say Dr. Bonnell was the instructor for the class?**
A For the rule-based or at that time artificial intelligence class?
**Q Yes.**
A That's correct.
**Q What was Dr. Kobayashi's role in the -- if any, of the class project that you just discussed?**
A He was my advisor
**Q Did he give you the idea of applying A rule-based system to VLSI?**
A No, sir.
**Q How did you come up with that idea?**
A It was part of the course.
**Q What was your inspiration for the idea?**

Page 26

A Could you explain that again.
**Q Did anything provide you with any unique insight that led you to believe that applying rule-based systems to VLSI would be a unique idea?**
A It is based on the papers that I have read, and I felt that this is an area that needs to be researched. It has not been extensively done. It's not been many publications in that area.
**Q What year did you -- strike that. As a result of the class project, were these papers that you identified on pages seven and eight written?**
A What? Say that again.
**Q As a result of your class project with Dr. Bonnell, did you write the papers indicated on pages seven and eight of Exhibit 500?**
A The courses that I took under Professor Bonnell has a direct influence on those two papers.
**Q What did you produce as a result of your class project with Dr. Bonnell?**
A A class report.
**Q Did you a produce class report in this litigation?**
A No, sir.
**Q Why is that?**
A I could not find the class report.

Page 27

**Q You indicated that you produced some notes; is that correct?**
A That's correct
**Q Are you able to identify those notes?**
A Yes, sir
**Q Are the notes hand-drawn sketches?**
A They include both hand-drawn sketches and computer -- computer-plotted diagrams.
**Q Is there any source code?**
A Yes, sir
**Q What type of source code?**
A Those source codes are written in C language.
**Q As a part of your class project?**
A That's correct.
**Q I'm handing you what has been marked as Exhibits 502, 503, 504, 505, 506. Would you take a moment to review these documents and let me know when you're finished.**
A Okay.
MR. OLIVER: For the record, Exhibit 502 bears production numbers FOO 000192 through 0198 Exhibit 508 bears production numbers FOO 000199 through 0203. Exhibit 504 bears production numbers FOO 000204 through 0209. Exhibit 505 bears production numbers FOO -- sorry, FOO 000216 through

Page 28

0226. And Exhibit 506 bears production numbers FOO 000256 through 263.
(Exhibit Nos. 502 through 506 were identified for the record.)
A Okay. I'm finished.
BY MR. OLIVER:
**Q Do Exhibits 502 through 506 comprise the notes for your class project with Dr. Bonnell?**
A I would not say the Exhibits 502 through 506 is entirely came out of the course with Professor Bonnell. Part of it, maybe, but not entirely.
**Q Would you turn to Exhibit 502.**
A (Witness complies) okay.
**Q Did you prepare Exhibit 502?**
A Yes, sir.
**Q When did you prepare it?**
A Are you referring to the entire 502?
**Q Are there parts of Exhibit 502 that were not prepared at the same time?**
A Possibly.
**Q Are you able to identify those parts?**
A I can try.
**Q Are you able to identify what parts of Exhibit 502 were prepared in connection with your class project for Dr. Bonnell?**

Page 29

A (Examining document) I would say page 00192, 00193, 00196, 00197, 00198 is inspired by a course that I took with Professor Bonnell
**Q What do you mean by "inspired"?**
A Based on the material that he taught in class that taught me how to take what is learned in class and apply to solve a particular problem.
**Q Is there any part of Exhibit 502 that you prepared in connection with your class project for Dr. Bonnell?**
A Say that again.
**Q Is there any part of Exhibit 502 that you prepared in connection with, not inspired by, but in connection with, simultaneously, with your class project for Dr. Bonnell?**
A I do not recall directly, since I don't have the final report that I presented in the class for Professor Bonnell.
**Q Earlier you indicated that you had notes that you produced in this litigation that were regarding your class project with Dr. Bonnell. Is that not true?**
A The statement I made was referring -- was -- it was related to the material that they present in the class for Professor Bonnell. But, again, like I

Page 30

mentioned, I don't have the class report, so I don't know if there is any page in here that's exactly a copy for the class project. This could be a draft or sketch for a subsequent final report for the class.

**Q Can you describe your class project?**

A The class project is -- it's a well-defined project that you -- that has an abstract title and objective. And when that task is completed, you have to write a final report.

**Q Do you remember the contents of your final report?**

A To the best of my knowledge, I -- it's been so many years, I just could not remember the details of the final report.

**Q Do you believe that you showed your final report to Dr. Kobayashi?**

A Possibly.

**Q You don't know for sure?**

A I don't know for sure.

**Q Do you believe that Dr. Kobayashi used your final report in preparing any publications for which he omitted your name?**

A That is possible

**Q You don't know for sure?**

A I don't know for sure.

Page 31

**Q Do you know if he did it intentionally?**

A I do not know for sure.

**Q Do you like Dr. Kobayashi?**

A Yes, I do like him.

**Q Do you believe he would do anything like that intentionally?**

A I really don't know exactly, you know, what he published out of the work that I presented to him, because I'm working under him, and I don't question his -- what he did, since he's my boss.

**Q At one point you switched advisors from Dr. Kobayashi to somebody else; is that correct?**

A That's correct.

**Q Why did you do that?**

A The reason I did that was because Kobayashi made a -- what I call a unethical or unofficial requirement on me, that I have to have finished published product on the cell selection module before I could graduate.

**Q When you say a "finished published product," what do you mean?**

A Meaning a completed program that is ready to be marketed.

**Q What do you mean "published"?**

A That means, you know, I say -- I said it's

Page 32

marketable. I didn't say "published." Did I say "published"?

**Q Yes.**

A Okay. Then I should strike out that. What I meant is, a product that is marketable, marketable, finished product.

**Q Did you complete that task?**

A I never quite complete the task to the stage where it's marketable.

**Q What was that product?**

A That product is the cell selector module.

**Q What does the cell selector do?**

A It selects a list of VLSI cells necessary to implement a particular function or description, and it optimize the list of cells.

**Q When did you complete that?**

A I completed the program, to the best of my knowledge, in 1985 or '86.

**Q What was the name of that program?**

A The program started out with the name Fame, and then it evolved into a subsequent version of it called Neptune.

**Q When was it called Neptune?**

A It was called Neptune, I believe, in 1986.

**Q Did it have the same functionality that you**

Page 33

**just described?**

A It just have improved functionality of the earlier version of Fame.

**Q Both Fame and Neptune selected a list of VLSI cells to implement?**

A That's correct, sir.

**Q What did you mean when you said "cells"?**

A Cells are the building blocks of integrated circuits necessary to implement a particular function.

**Q Can you give us an example?**

A For example, an adder, it takes two numbers, add them and then produce one output.

**Q Were the cells defining a particular type of adder?**

A That's correct. That could be different cells of the same function.

**Q Why did you call them cells?**

A The reason we call them cells, because these are the basic building blocks, just like in the tree structure, at the bottom of a tree structure is, you know, the leaves or the cells.

**Q Were these cells technology specific?**

A Yes, sir.

**Q What was the smallest building block?**

A The smallest building block is a transistor.

Page 34

**Q Have you called them modules before?**
A That's correct.
**Q Do you find cells and modules to be interchangeable?**
A That's correct.
**Q Just so we're clear, you do not have any notes or papers that reflect the final product from your class project with Dr. Bonnell; is that correct?**
A Say that again.
**Q You do not have any notes or other papers that reflect the final product produced pursuant to your class project with Dr. Bonnell; is that correct?**
A That's correct.
**Q Why didn't you write your master thesis on the use of rule-based systems in VLSI?**
A I believe the reason was, at that time I was -- I was very much interested in the database design course that was offered by Professor Bonnell.
**Q Did you not think the rule-based application in VLSI was significant work?**
A Subsequently when I took the rule-based systems, I learned that it was -- it was going to be the new trend in the VLSI design.
**Q Why didn't you pursue it?**
A The master's thesis was inspired by the

Page 35

earlier course that I took under Professor Bonnell, which is the database system. So I took that database systems under Bonnell first. And then subsequently I took another course or two under Professor Bonnell in the area of artificial intelligence or rule-based knowledge-based systems.
**Q After your master thesis was already completed?**
A Probably in the process.
**Q Why didn't you pursue rule-based systems in VLSI for your Ph.D.?**
A I would have, and I should have, and I could have, but remember I told you earlier about the requirement from Dr. Kobayashi for me to graduate, that requirement to me is not acceptable. So it was subsequently I parted ways with him.
And I clearly remember when I parted ways with him, he told me that I cannot work in that area anymore, as long as I stay in University of South Carolina.
**Q What year was that?**
A That happened in -- to the best of my knowledge, that happened in early part of 1987.
**Q Were you working under Dr. Kobayashi at the University of South Carolina?**

Page 36

A I was working as a research associate, research assistant under him.
**Q At the University of South Carolina?**
A That's correct, sir.
**Q Did you not work at his company, ICC?**
A I did as a consultant, sir.
**Q When did you work as a consultant for ICC?**
A I believe that was in 1986 and early part of '87.
**Q When Dr. Kobayashi allegedly made this requirement to have a finished, published product, were you working for ICC?**
A That's correct.
**Q Was he requiring you to make this product for ICC?**
A Say that again
**Q Was he requiring you to make this product for ICC?**
A Which product are you referring to?
**Q The commercial or marketable product that you later called Neptune, the cell selector.**
A Okay. And what was the question again?
**Q Whether or not Dr. Kobayashi was requiring you to make this product for ICC.**
A That's correct.

Page 37

**Q So his demands weren't for your degree, but for ICC?**
A Say that again
**Q His demands to have a commercial product were for the company ICC, not for the University of South Carolina; isn't that correct?**
A That's not for my degree.
**Q Exactly. It's not -- it wasn't for your degree. It was for his company, ICC; right?**
A That's correct.
**Q So he wasn't demanding that you make the product so that you graduate, he was demanding that you make the product because you were also an employee or consultant for ICC; isn't that correct?**
A No. No. I think you have misunderstood here What happened is this: The line between academia and his company was blurred; okay? And when he made that requirement that I got to have the finished product marketable for ICC before I could graduate, now to me that is a conflict of interest.
**Q Did he do that because he thought that your work to date had not been fully researched?**
A Say that again
**Q Did he make that requirement because your work to date had not been fully researched?**

Page 38

MR. SU: Objection to form.
A Fully researched by who?
BY MR. OLIVER:
**Q You.**
A By me?
**Q Yes.**
A I still don't get your question.
**Q Did he make the requirement that you have a marketable product because he felt that your work to date had not been fully researched?**
A Fully researched? What do you mean by "fully researched"?
**Q It was not complete.**
A My work was completed when we made those publications.
**Q Your work for your master's?**
A No, for the dissertation.
**Q For your Ph.D.?**
A That's correct, yeah.
**Q What was your dissertation on for your Ph.D.?**
A My dissertation was on neural networks for job shop scheduling.
**Q How was Dr. Kobayashi able to somehow restrict your ability to graduate with a Ph.D. by requiring you to have a marketable product?**

Page 39

A That was his verbal condition to me before I could defend my dissertation. So, in other words, if I don't get his marketable product completed, he would not have the defense and certainly would not even sign the dissertation.
So if that dissertation is not signed, you don't graduate.
**Q Were you already working in -- towards your neural networks dissertation at that time?**
A No, sir. I did not neural network dissertation after I parted ways with Dr. Kobayashi.
**Q So what topic was he going to refuse to defend by not having you produce a marketable product?**
MR. SU: Objection as to form.
A Could you say that question again?
BY MR. OLIVER:
**Q What topic were you working towards a Ph.D. at that time that he was requiring you to have a marketable product before you graduated?**
A Are you talking about Dr. Kobayashi?
**Q Yes.**
A Okay. He was the -- the dissertation I was referring to for Kobayashi is going to be on the cell selection.
**Q So originally you were going to have a**

Page 40

**master -- a Ph.D. dissertation on cell selection?**
A That's correct, a knowledge-based cell selection system.
**Q Why did you change to neural networks?**
A The reason I had to switch over to a neural networks is because Dr. Kobayashi, who was a tenured professor at that time in the department, he has the, you know, authority, I'm pretty sure. And he told me specifically that if I left him, that I cannot pursue anything, any topic in the area of VLSI research, that I have to do something outside of that area.
**Q And despite all that, you still like him?**
A I think he's a nice person.
**Q Despite that?**
A Yes.
**Q Would you like to take a break?**
A Yes.
(Short recess).
MR. OLIVER: Back on the record.
A I would like to clarify two items that were discussed earlier. One is the program called Fame. There is -- and Neptune. There is a distinction between the two. The Fame is a frame-based database system for managing VLSI design, whereas Neptune is a frame-based database system with a cell selection

Page 41

algorithm incorporated in it.
And the second clarification is that the Exhibit 502 through 506 are not notes directly from Professor Bonnell's class. Those are not class notes.
**Q Why did you make that clarification?**
A Say that again.
**Q Why did you make those clarifications?**
A On further thoughts, I may have, you know, accidentally implied that they are class notes, when they are not.
**Q On the first clarification?**
A On the second clarification.
**Q And on the first clarification --**
A That's correct, yes.
**Q What made you make that clarification?**
A Because earlier I may have implied that Fame and Neptune are the same thing, when in fact that they are not.
**Q Did your attorney advise you that you should make these clarifications?**
MR. SU: Objection, privilege.
BY MR. OLIVER:
**Q Just a simple yes or no.**
MR. SU: I instruct the witness not to answer.
BY MR. OLIVER:

Page 42

**Q Will you answer the question?**
A On the advice of my attorney, I would not.
**Q Is there a difference between a frame-based system and a rule-based system?**
A Yes, sir.
**Q What is the difference?**
A A frame-based system is basically a representation system for storing information, whereas a rule-based system is a system for making decisions.
**Q Can you have a rule-based system that utilizes a frame-based database?**
A That's correct.
**Q Would you turn back to Exhibit 502.**
A (Witness complies).
**Q I believe earlier you said certain pages of Exhibit 502 were inspired by your class with Dr. Bonnell; isn't that correct?**
A That's correct, sir.
**Q Why were they inspired by your class with Dr. Bonnell?**
A Because the descriptions are rule-based descriptions.
**Q Is that the only reason?**
A That's correct.
**Q You prepared all of the pages of Exhibit 502; is that correct?**

Page 43

A That's correct, sir.
**Q Did you have assistance from anyone else?**
A Say that again.
**Q Did you have assistance from anyone else?**
A No, sir.
**Q When did you prepare Exhibit 502?**
A Are you talking about the time frame?
**Q Yes.**
A This documents were prepared, to the best of my knowledge, in early part of May.
**Q What year?**
A 2006.
**Q Why did you prepare these?**
A On the advice of my attorney.
**Q So prior to May 2006, Exhibit 502 did not exist?**
A They do exist.
**Q Let's step back. When did you prepare originally the pages of Exhibit 502?**
A No. I think we -- I think I misunderstood your earlier question. When you said "prepared," are you talking about producing the documents?
**Q Create the ideas on this page.**
A Oh, okay. Now I misunderstood your question.

Page 44

**Q Let's go back and restate it. When did you prepare the writings of Exhibit 502?**
A The ideas in 502 were prepared in 1984 and 1985 -- between '84 and '86 I would say.
**Q How can you be sure?**
A It was during those -- it was during the time when I was taking all of my graduate courses.
**Q Were the pages of Exhibit 502 from a notebook of yours?**
A They were derived from a notebook, yes. Yes, sir.
**Q What do you mean "derived from a notebook"?**
A For example, figure 1 came from a sketch.
**Q Figure 1, what page?**
A Figure 1 of page 00192 of Exhibit 502.
**Q Did you prepare page 192 on a computer?**
A Yes, sir.
**Q Did you retain a copy of a printout of that computer as page 192?**
A When you say "printout," are you talking about the original printout from the computer that plotted it or --?
**Q Yes.**
A I believe I have the original copy, yes, sir.
**Q Is page 192 a copy of a printed page?**

Page 45

A When you say -- what do you mean by "printed page"?
**Q When you were asked to produce page 192 of Exhibit 502, did you copy a printed page from your files, or did you print the page from some computer storage mechanism?**
A Do you mean at that time, back in '84, '86?
**Q In May 2006.**
A Oh, you're talking May 2006. I went to Kinko's and made copies of the originals.
**Q The originals were hard copies; is that correct?**
A That's correct, sir.
**Q Is that true of all the papers that you produced in this litigation?**
A The -- I have originals.
**Q Hard copies?**
A Yes, sir.
**Q And you had saved all the hard copies for over 20 years; is that correct?**
A That's correct.
**Q Why did you save them all?**
A I save along with all my notes from as far back as I could in case if I ever need to refresh my memory.

Page 46

**Q Do you have any electronic copies of any of your work dating back to the early '80s?**
A Unfortunately, they were all destroyed.
**Q The source code that you produced in this litigation came from hard copies; is that correct?**
A I have the source code. I have both the hard copies and the electronic copy.
**Q So when you said that all the electronic copies were destroyed, what were you talking about?**
A I'm talking about the documents. I'm not talking about source codes.
**Q So for the source code you have electronic copies and hard copies; is that right?**
A That's correct, sir.
**Q Do you have any electronic copies of any other documents or other papers?**
A No, sir.
**Q When you produced the source code for this litigation, did you copy hard copies, or did you print out pages from your electronic copies?**
A I print out copies from my electronic copy.
**Q Do you have the original disks?**
A What do you mean by "original disks"?
**Q I'm sorry. Do you have the electronic copies stored somewhere?**

Page 47

A Yes, sir.
**Q Where are they stored?**
A On my computer in my office.
**Q In your office at your work?**
A That's correct, sir.
**Q University of -- I'm sorry, Florida State University?**
A That's correct, sir.
**Q Why do you have copies on your computer at work?**
A I always try to keep copies of my source code, because that is my property, my intellectual property.
**Q The source code was created in 1986; right?**
A That's correct, somewhere between '84 and '86.
**Q And you retained a copy?**
A That's correct.
**Q Did it belong to you?**
A I -- yes, sir.
**Q You didn't sign an agreement with the University of South Carolina that all intellectual property belonged to the university?**
A I don't recall that.
**Q You didn't sign an agreement with ICC that all intellectual property --**
A I don't recall that either.

Page 48

**Q You have no doubt, though, that you may have signed something; right?**
A I don't recall signing any nondisclosure agreement.
**Q That wasn't the question. Do you have any doubt that you signed such an agreement regarding the intellectual property ownership?**
A Say that again.
**Q You don't -- do you have any doubt that you signed an agreement regarding intellectual property?**
A To the best of my knowledge, I did not sign an agreement.
**Q Did you sign any agreements with ICC when you became a consultant for ICC?**
A No, sir.
**Q None whatsoever?**
A Not to the best of my knowledge.
**Q Would you be surprised if it turns out that you did sign such an agreement?**
A I would be surprised.
**Q Did you sign any agreements with University of South Carolina when you were a graduate student?**
A I don't recall signing an agreement.
**Q Were you given any type of compensation while you were a graduate student from the University of**

Page 49

**South Carolina?**
A The only compensation was a stipend.
**Q Did you understand that as a graduate student that you were an employee of the university?**
A I don't recall understanding that kind of employment back then.
**Q Did you understand that at the University of South Carolina it was their policy that any work that was performed using their resources was the property of University of South Carolina?**
A It's possible.
**Q So isn't it possible that the copies you retained in your computer in Florida State University are the property of University of South Carolina?**
A Possible.
**Q Just to be clear, the copies of the source code that you produced in this litigation are printouts from your computer in the Florida State University; is that right?**
A That's correct, sir.
**Q Do you have any other electronic copies of that source code?**
A What do you mean by "other electronic copies"?
**Q Other than on your computer at Florida State University?**

Page 50

A Those are the only place I store them, sir.
**Q You don't have any personal copies at your home?**
A Well that is mine, I guess.
**Q I'm sorry. Turning back to Exhibit 502.**
A Okay.
**Q Do you know the date in which you created page 0193?**
A To the best of my knowledge, this sketch was produced in either '84 or '85, in that area.
**Q Not '86?**
A Possible.
**Q Is it possible it was created in 1987?**
A No.
**Q Why is that?**
A In '87, most of the preliminary work has already been completed.
**Q You said that Dr. Kobayashi put a requirement on you to have a marketable product in 1987; isn't that correct?**
A That's correct, sir.
**Q Did you say that you completed that product?**
A I finish writing the code. However, it is not in a state where it's marketable.
**Q When did you finish writing the code?**

Page 51

A The code was probably completed in '86.
**Q Do you know when in 1986?**
A I don't recall exactly.
**Q Do you know exactly when in 1987 Dr. Kobayashi made this requirement of you?**
A It was in early '87, spring of '87.
**Q Do you know if the product -- which I believe was in Neptune; is that correct?**
A Yes, sir.
**Q -- was further revised by others after you left?**
A I'm not aware of it.
**Q Would you be surprised if it was?**
A Yes. I would be a little bit surprised
**Q If it wasn't marketable, why would you be so surprised that it was revised?**
A Say that again.
**Q If the product was at that time not marketable, why would you be so surprised that it was revised?**
A When I say "not marketable," I meant that program is not well documented. It has not been well tested to perform in the real environment.
**Q So as far as you know, it didn't work, because it hadn't been well tested?**

Page 52

A That's not true. That's not true.
**Q You said it wasn't well tested; right?**
A Well tested means -- it has been tested, but, you know, you could extensively test, and that's going to require a lot of time. And I never had the time to extensively test it.
**Q Why would you bother to extensively test it if you knew it was going to work anyway?**
A You can never be so sure of --
**Q So isn't it possible that, because of the testing, that the program had to be revised to make it marketable?**
A That's correct.
**Q So it is possible; right?**
A Possible on what?
**Q That someone would have to revise the program to make it marketable?**
MR. SU: Objection, speculation.
A It is possible to further refine that program.
BY MR. OLIVER:
**Q You have no knowledge whatsoever, however, that it was ever used in any commercial product; isn't that right?**
A Say that again.
**Q You have no knowledge whatsoever whether or**

Page 53

**not the Neptune program was ever used in any commercial product?**
A Not to my knowledge.
**Q As far as you know they could have used a completely different program; isn't that correct?**
A Say that again.
**Q As far as you know ICC could have used a completely different cell selector program?**
MR. SU: Objection as to form.
A I seriously doubt it.
BY MR. OLIVER:
**Q Why is that?**
A Because I have been working on the cell selection module, and nobody else that I know of has worked on that. And the cell selection module is the necessary module for the silicon compiling.
**Q What silicon compiler?**
A The knowledge-based silicon compiler.
**Q What is the knowledge-based silicone compiler?**
A That is the idea that I sketched in Exhibit -- let me try to find it -- in Exhibit 503, page 00199.
**Q Did you coin the phrase, knowledge-based silicon compiler?**
A That's correct, sir.
**Q How did you coin that phrase?**

Page 54

A It came from -- it is probably inspired by the courses I took in rule-based systems.
**Q No one else gave you the idea for that name?**
A That's correct
**Q Dr. Kobayashi didn't come up with that name himself?**
A I don't recall it. I don't recall that he gave me any input in that title.
**Q Do you recall that he gave you -- that he came up with the idea?**
A No, no. I -- that was my original idea.
**Q Did you document the idea?**
A The only document I have is this hand-sketched diagram.
**Q When did you create this hand-sketched diagram which is Exhibit 503, page 199?**
A I believe, to the best of my knowledge, this sketch was made in 1985.
**Q Did you come up with all the idea reflected in this page 199?**
A When -- what do you mean by "all of the ideas"?
**Q Did you, for example, come up with the idea of using the AAF language?**
A I am not the inventor of AAF language.

Page 55

**Q Did you know to use the AAF for the KBSC system?**
A Yes.
**Q That was your idea?**
A The AAF already existed.
**Q The use of the AAF in the KBSC did not exist prior to your idea; isn't that correct?**
A All I can say is that this configuration, this system was my original idea.
**Q Everything on this page 199 was your idea alone; is that correct?**
A That's correct, sir.
**Q Did you ever apply for a patent on this idea?**
A No, sir.
**Q Why is that?**
A I'm not aware of what a patent is at that time, sir.
**Q Do you know exactly when in 1985 you came up with this sketch, 199?**
A My estimate would be the early part of 1985.
**Q And you have no other documentation that reflects your idea regarding the KBSC system; is that correct?**
A To the best of my knowledge, I don't have any of those

Page 56

**Q No other pages of Exhibit 503 reflect the KBSC system; is that correct?**
A (Examining document). To the best of my knowledge, I do not have any other documentation that has the title "knowledge-based silicon compiler" in my possession, except this page 00199 on Exhibit 503.
**Q Did you show this sketch to anyone?**
A Yes, sir.
**Q Who did you show it to?**
A I showed it to my counsel.
**Q In early 1990 -- in early 1985 or any time around early 1985, did you show this sketch to anyone?**
A Yes, sir.
**Q Who did you show it to?**
A I -- I may have showed it to my advisor, Dr. Kobayashi.
**Q When?**
A My estimate would be 1985.
**Q Do you have a clear recollection of showing it to Dr. Kobayashi?**
A I always meet with him once or twice a week.
**Q Do you show him everything you do?**
A I would say most of the work I did.
**Q Do you have any record of showing Dr. Kobayashi?**

Page 57

A No, sir.
**Q Did you show it to anyone else?**
A No, sir.
**Q Why not?**
A There is no reason to.
**Q Why?**
A Who would I show it to?
**Q I don't know. Dr. Bonnell?**
A No, sir.
**Q Wouldn't Dr. Bonnell fully appreciate having a rule-based system applied to VLSI?**
A No, sir.
**Q He wouldn't? Why is that?**
A He was not really interested in VLSI, to the best of my knowledge.
**Q He's interested in rule-based systems; isn't that correct?**
A That's correct.
**Q In fact, you used a rule-based system in VLSI for his class project; right?**
A That's correct.
**Q Wouldn't this be a follow-up to your class project?**
A Somewhat, yes.
**Q You're not saying that Exhibit 503, page 199,**

Page 58

**was your class project; are you?**
A Are you talking about this particular page, 00199?
**Q Yes. Yes.**
A To the best of my recollection, I -- this is just a sketch. I have no idea what the final product is for the class project.
**Q How did you come up with this sketch?**
A It actually evolved. You can see in the top part of the page, I have a computer-generated diagram that I made. And then later I made some corrections on it, and then I revised it. And you can see my hand-sketched notes through the evolution of the design.
**Q What problem were you trying to solve at the time?**
A The problem I'm trying to solve is to translate a behavioral language description into silicon.
**Q Where did you get that idea?**
A The idea was inspired by the courses that I took.
**Q I'm sorry. Where did you get the appreciation for that problem?**
A This project was inspired by the courses that

Page 59

I took.
**Q Do you know what courses inspired you?**
A To the best of my recollection, those are the courses that were -- that I took under Professor Bonnell, and there was a one VLSI course that I took under Dr. Peeples.
**Q Who is Dr. Peeples?**
A Dr Peeples is an adjunct professor from NCR at that time
**Q What, in his course, inspired you to solve the problem of translating behavioral language description into silicon?**
A Dr. Peeples taught me the basics of transistors and integrated circuits, and Professor Bonnell taught me the rule-based systems and artificial intelligence.
**Q How did you even know there were different abstract levels of input design for a system?**
A It could be based on the papers that I have read
**Q What papers did you read?**
A At that time I used to go to the library and read up on the VLSI design.
**Q Can you identify any papers today?**
A Some of the journals or magazines that I read,

Page 60

one of them is called EDN.
**Q Is there a particular article in EDN that --**
A I don't recall a particular issue. It was in 1984, '85 time frame.
**Q Did you publish any papers that describe the KBSC system?**
A Indirectly, yes.
**Q What did you publish?**
A The paper on the knowledge-based VLSI cell selection paper.
**Q The paper with Dr. Kobayashi?**
A That's correct, sir.
**Q Handing you what has been marked as Exhibit 508, bearing production number KBSC 00914 through 0917. Is Exhibit 508 the "Knowledge-Based System For VLSI Module Selection" paper that you are describing?**
A Say that again, sir.
**Q Is Exhibit 508 the paper that you are describing?**
A That's correct, sir.
**Q Other than this paper of Exhibit 508, was there any other paper that described the KBSC system you sketched on Exhibit 503?**
A Another paper is the "A Framework For Managing VLSI CAD Data."

Page 61

**Q Handing you what has been marked as Exhibit 509, bearing production numbers KBSC 000904 through 0913. Is Exhibit 509 the framework paper you just discussed?**
A That's correct, sir
(Exhibit No. 509 was identified for the record).
BY MR. OLIVER
**Q Other than Exhibit 508 and 509, are there any other papers that describe KBSC system of Exhibit 503?**
A Yes, sir.
**Q What papers?**
A There was another unpublished manuscript.
**Q Handing you what has been marked Exhibit 510, bearing production number FOO 000239 through 0255. Is Exhibit 510 an unpublished manuscript that you just discussed?**
A That's correct, sir.
(Exhibit No. 510 was identified for the record).
BY MR. OLIVER:
**Q Other than Exhibits 508, 509 and 510, are there any papers that describe the KBSC system of Exhibit 503?**
A To the best of my knowledge, there is no other

Page 62

papers.
**Q All of the papers in Exhibits 508, 509 and 510 have Dr. Kobayashi as coauthor; isn't that correct?**
A That's correct, sir.
**Q Why is that?**
A The reason is, he is my advisor.
**Q Is it customary to have your advisor placed on your publications?**
A That's correct, sir.
**Q Do you believe Dr. Kobayashi contributed ideas to the papers of Exhibits 508, 509 and 510?**
A What do you mean by "ideas"?
**Q Anything that's reflected in Exhibits 508 through 510.**
A Again, can I clarify, what do you mean by "ideas"?
**Q Do you have any understanding of the term "ideas"?**
A Ideas about the paper?
**Q Anything. Was there any contribution by Dr. Kobayashi, for example, in writing Exhibit 508?**
A He helped me with the grammar and the technical writing skills.
**Q Was that his only contribution?**
A I believe so.

Page 63

**Q He did not provide you with any technical input?**
A Not that I know of.
**Q Did he provide any technical input for Exhibits 509 or 510?**
A No, sir.
**Q Exhibit 508 indicates on page 0914 that the work was supported by International Chip Corporation; is that correct?**
A That is correct. And that is what he wanted me to put it down in the paper.
**Q Is it not true?**
A I did not say it's not true. I said that's what he wanted to be on the paper.
**Q Was the work in Exhibit 508 supported by ICC?**
A Not totally.
**Q In any respect?**
A Partially, yes.
**Q How was it supported by ICC?**
A I -- to the best of my knowledge, because Kobayashi, who is my advisor, is also the -- I guess the founder of ICC, he could have put the company as -- as part of the sponsor. Again, it is not my intention to put the name of the company.
**Q What do you mean "sponsor"?**

Page 64

A Again, like I mentioned, Kobayashi is the founder of this company, and since he's my advisor, he has a prerogative to, you know, to put -- to list whoever, you know, whoever the sponsor is.
**Q Were you a graduate student at the time that you wrote this paper of Exhibit 508?**
A That's correct, sir.
**Q Were you a graduate student when you came up with the idea for Exhibit 503?**
A I was a graduate student, sir.
**Q When you're a graduate student, don't you work on projects that are sponsored by either the university or an industry?**
A That's correct.
**Q Do you ever work on projects that are not sponsored?**
A That's correct, sir.
**Q Was the KBSC system a project that was sponsored?**
A I'm not aware of the sponsorship.
**Q There could have been sponsors; is that correct?**
A It could be.
**Q How does the sponsorship work?**
A Sponsorship means there is monetary funds

Page 65

involved, according to my knowledge.
**Q That's where the stipend comes in; is that right?**
A The stipend was through the college of engineering, sir.
**Q You're not paid through the sponsorship?**
A Not to my knowledge.
**Q Not directly?**
A Not to the best of my knowledge.
**Q When you created the KBSC system of Exhibit 503, did you use any university resources?**
A Yes, sir.
**Q What did you use?**
A The computer.
**Q Anything else?**
A The paper.
**Q Did you develop the KBSC system at the university?**
A That's correct, sir.
**Q Did you have a working prototype?**
A It was a paper design, sir.
**Q You never had a prototype?**
A Prototype of what?
**Q The KBSC system that you have in Exhibit 503.**
A Are you talking about the entire system?

Page 66

**Q Yes.**
A I don't have the entire system, sir.
**Q You invented it; right?**
A The idea was mine.
**Q The entire system; right?**
A The -- what is on this page was my original idea.
**Q What is the output of what's on this page?**
A It goes to the module placement and routing.
**Q What is a module?**
A Which is a cell.
**Q What is a cell?**
A The integrated circuits building blocks.
**Q Do you define that on the page?**
A It is understood, sir.
**Q How is it understood from the page?**
A This sketch is for my own use.
**Q Did you ever develop any portion of your KBSC system?**
MR. SU: Object as to form.
A Say that again, sir.
BY MR. OLIVER:
**Q Did you ever develop any portion of the KBSC system shown in Exhibit 503?**
A Yes, sir.

Page 67

**Q What portion?**
A I believe I developed the parser and the module selection and the knowledge base.
**Q How did you develop the knowledge base?**
A It is based on an expertise that's an IC designer.
**Q Are you an IC designer?**
A Yes, sir.
**Q So it was your own expertise?**
A That's correct, sir.
**Q Did you have any expertise from anyone else?**
A I could use somebody else's I expect.
**Q Did you?**
A No, I did not, sir.
**Q What type of expertise did you have in the system?**
A What system are you referring to?
**Q The system of Exhibit 503.**
A Could you elaborate more? What expertise are you referring to?
**Q You said you used expertise of your own in the system. What expertise did you put in the system?**
MR. SU: Objection, misstates prior testimony.
A I don't understand your question, sir.
BY MR. OLIVER:

Page 68

**Q I would like you to just explain what type of expertise was put in the knowledge base of Exhibit 503.**
A The expertise is the expertise from the IC designer.
**Q What type of expertise?**
A For example, the power dissipation, the propagation delay and the area of the cell.
**Q How is that expertise?**
A That is not just the only expertise. You know, there are other expertise involved --
**Q At the time you created Exhibit 503, what type of expertise was in the knowledge base?**
A The expertise is -- for example, a particular function could be implemented in a number of ways, and each way has some trade-off. And the question is, you know, how do you pick which one to get optimum performance.
**Q Can you give us an example?**
A An example would be an adder. We can have a ripple adder, which takes up a lot of space and is very slow, and you can have a faster adder, like a carry safe adder, but it takes up a lot of space and is much harder to design.
**Q Is there any other rules -- I'm sorry,**

Page 69

**expertise?**
A There are other expertise.
**Q What other expertise?**
A Expertise on the database, on the knowledge base?
**Q Yes.**
A I believe those are the predominant ones.
**Q Any others that you know of?**
A Not that I know of.
**Q Did you have this expertise in mind when you created the hand sketch of Exhibit 503?**
A Yes, sir.
**Q Simultaneously with the hand sketch?**
A Yes, sir.
**Q What year did you say you drew this?**
A I believe this was drawn in early 1985.
**Q How can you be sure?**
A That is just my estimate, based on the courses I have taken at that time.
**Q Did you keep a lab notebook?**
A My lab notebook are basically my sketches like this.
**Q Was this sketch of Exhibit 503 bound in a notebook?**
A No, sir.

Page 70

**Q Was it just loose?**
A Yes, sir.
**Q Was it in a folder?**
A That's correct, sir.
**Q What type of folder?**
A It's like a manilla folder
**Q Did the manilla folder have a label?**
A Say that again.
**Q Did the folder have a label?**
A Probably, yes.
**Q What did the label say?**
A Probably the label would say, knowledge-based system, something like that.
**Q You didn't produce the folder.**
A The folders probably are lost.
**Q So when you retrieved this document, was it in a folder at the time?**
A No. It was not in a folder. It was loose. Now the fold every was -- at that time, you are talking about some 20 years ago. But in the process of moving and, you know --.
**Q You did not get the KBSC system -- strike that. You did not get the idea for the KBSC system from Dr. Kobayashi; is that your testimony?**
A That's correct, sir.

Page 71

**Q Do you have any doubt on that?**
A No, I don't have any doubt on that.
**Q How can you be so sure?**
A To the best of my knowledge, that is my original work, sir.
**Q You met with him weekly; right?**
A That's correct.
**Q You discussed all the topics?**
A I don't discuss everything.
**Q Did he ever discuss his work with you?**
A What work are you talking about? What work are you referring?
**Q I don't know. Did he ever discuss any of his work with you?**
A Yes, some work.
**Q Did he discuss any rule-based systems with you?**
A No.
**Q Ever?**
A No.
**Q Not even during your work at ICC?**
A The discussion on the knowledge-based systems was after we published these papers, which is Exhibit 508
**Q You worked as a consultant in 1986 for ICC; is**

Page 72

**that correct?**
A That's correct, sir.
**Q What did you do as a consultant?**
A I wrote -- I advise on what needs to be -- what is needed to make a knowledge-based, you know, component.
**Q What did you do?**
A My specific task that was assigned to me is the module selection.
**Q Do you know what the company was working on at the time?**
A At that time I was just a graduate student, and I'm not involved in the administrative work.
**Q Do you know if your module selector was part of a bigger system?**
A Yes, possible.
**Q What was the bigger system?**
A It was to a compiler.
**Q Did you know it was a knowledge-based compiler?**
A I'm not sure what -- I believe it was based on my paper that Dr. Kobayashi and I published.
**Q So you went to work for a company; you were asked to write a small portion of a system that you created; isn't that right?**

Page 73

A That's correct, yes.
**Q And you didn't say anything to Dr. Kobayashi at that time that --**
A I would not question him, sir.
**Q But you realize that he was working on your system; right?**
A That's correct, sir, yes.
**Q And you didn't say anything?**
A No, I would not say anything.
**Q You didn't demand any compensation for that?**
A No.
**Q Did you tell anybody else that this was your idea?**
A No, I did not.
**Q You didn't tell Mr. Ozeki?**
A He kind of know -- kind of knew what I was working on.
**Q So he knew about the KBSC system?**
A I would not -- I would not say that he knew intimately about --
**Q You were roommates; right?**
A That's correct.
**Q How long were you roommates?**
A We were roommates for, to the best of my recollection, two or three years.

Page 74

**Q What years?**
A I believe starting in -- to the best of my recollection, starting in the fall of '84 until '88.
**Q What type of apartment did you have?**
A It was a two-bedroom apartment.
**Q Where was it?**
A Where?
**Q Yeah.**
A The name of the apartment was called River Bend Apartments in West Columbia.
**Q You never showed him your idea for the KBSC system?**
A I do not recall, sir.
**Q He worked at ICC too; right?**
A That's correct.
**Q He got you the job there; right?**
A He's not a person who got me the job there.
**Q Who got you the job?**
A It was Kobayashi.
**Q Did you get him the job there?**
A I do not recall.
**Q But you never mentioned to Ozeki or anyone that the KBSC system that ICC was working on is your idea?**
A I would not -- I'm not that kind of person who

Page 75

would boast what I did.
**Q Were you flabbergasted when you found out they were working on your system?**
A Who was working on my system?
**Q ICC.**
A Well I would not question that.
**Q But yet you questioned it when you found out just recently that there was a paper that described the KBSC system; right?**
A That's correct, without my name on it, that's correct.
**Q Right. Well your name was nowhere in the ICC literature as the system belonging to you; right?**
MR. SU: Objection as to form.
A I do not recall that, sir.
BY MR. OLIVER:
**Q You didn't receive any compensation for inventing the system; right?**
A No, I did not.
**Q You didn't ask for any compensation; right?**
A No. At that time I was more concerned about graduation.
**Q You didn't leave ICC because of their use of your system?**
A No.

Page 76

MR. OLIVER: Want to take a break?
(Short recess).
BY MR. OLIVER:
**Q Back on the record. Would you turn back to Exhibit 502.**
A (Witness complies). Okay.
**Q On page 0192, which is the first page of Exhibit 502, you have a caption, figure 1, architecture of KBMS. What is KBMS?**
A Knowledge-based management system.
**Q It doesn't say silicone compiler there; right?**
A No.
**Q Why is that?**
A Sorry, sorry. Let me take it back. It is not knowledge-based management system. It's knowledge-based module selection.
**Q Does figure 1 of this exhibit depict the KBSC system?**
A Part of it.
**Q What part is missing?**
A Missing are routing, the netless generator.
**Q Had you conceived of those elements that are missing at the time that you wrote or created Exhibit 502, page 192?**
A Say that again.

Page 77

**Q Had you created those missing elements at the time you created page 192?**
A To the best of my knowledge, this figure here came first, before a figure of -- sorry. Let me clarify this. To the best of my knowledge, figure 1 of page 00192 of Exhibit 502 came first, before the first page of Exhibit 503, which is page 00199.
**Q Exhibits 502 through 506 are all hand drawing pages authored by you; is that correct?**
A That's correct, sir.
**Q Had you ever shown any of these pages to anyone else?**
A The only person I may have shown them is my advisor at that time, Dr. Kobayashi.
**Q And what time frame are we talking about?**
A We're talking about '84 through '86.
**Q All of the pages of Exhibits 502 through 506 were created in the time frame 1984 through 1986; is that correct?**
A Let me look at -- you say Exhibits 502 through --?
**Q 506.**
A -- through 506?
**Q These are all the hand drawing pages, or primarily hand drawing?**

Page 78

A What was your question again?
**Q All of the pages of Exhibits 502 through 506 were created during the time frame 1984 through 1986; is that correct?**
A That's correct.
**Q How can you be so sure of the time frame?**
A The reason I can be so sure is because it was during that time that I was a -- was a graduate student of Dr. Kobayashi.
**Q How do you know none of the pages were created after 1986?**
A It is possible that some pages may be created in '87
**Q Not 1988 or after?**
A No, no.
**Q Didn't you publish a paper in 1990 directed to cell selection?**
A That's correct.
**Q Did you do work in 1990 for cell selection?**
A No, no.
**Q How did you come to create a paper in 1990 --**
A There was a manuscript that has not been published
**Q Prior to that time?**
A That's right.

Page 79

**Q Was it based on work you did with Dr. Kobayashi?**
A It was somewhat related, but it was not his idea.
**Q Didn't you attempt to publish a paper with a Dr. Takefuji in which the university required you withdraw that potential publication?**
A That's correct, sir.
**Q What was the name of that publication?**
A I don't recall.
**Q Do you recall the circumstances of that publication, potential publication?**
A I don't recall.
**Q But you do recall that it was withdrawn; right?**
A That's correct, yes.
**Q Did it deal with cell selection?**
A I don't recall.
**Q Do you know if it dealt with the KBSC system?**
A I don't recall, either.
**Q Do you know why it was withdrawn?**
A I believe it was withdrawn because Takefuji's name was on it, and Kobayashi's was not on it.
**Q Was that the same paper that you later published in 1990?**

Page 80

A I don't recall.
**Q The paper in 1990 dealt with cell selection but did not have Dr. Kobayashi's name; is that correct?**
A Say that again.
**Q The paper you published in 1990 dealt with cell selection, but did not --**
A That's correct.
**Q -- include as coauthor Dr. Kobayashi; isn't that correct?**
A That's correct, sir.
**Q In fact, you don't reference any of his papers; isn't that correct?**
A I don't recall, since I don't have a copy of that paper.
**Q Handing you what has been marked as Exhibit 507, bearing production numbers FOO 000408 through 0420. Is Exhibit 507 the paper that we've been discussing that was published in 1990?**
A That's correct.
(Exhibit No. 507 was identified for the record).
BY MR. OLIVER:
**Q Exhibit 507 has a lot of the same material that appears in the unpublished paper coauthored by**

Page 81

**Dr. Kobayashi, which is marked as Exhibit 510; isn't that correct?**
A That's correct.
**Q Why did you leave Dr. Kobayashi off of Exhibit 507?**
A He was not my advisor anymore.
**Q He did not contribute anything to the work described in 507?**
A I don't believe so.
**Q Are you saying he didn't describe -- he did not perform any contribution to Exhibit 510?**
A To the best of my knowledge, I was the person who wrote that paper.
**Q He did not provide any ideas?**
A To the best of my knowledge, no, sir.
**Q Isn't it possible that he did contribute ideas, you just don't remember?**
A I do not recall.
**Q In Exhibit 510 you cited two articles authored by you and Dr. Kobayashi; isn't that right? I will direct you to page 0250 of Exhibit 510.**
A That's correct.
**Q Those papers, however, were not referenced in Exhibit 507, the paper that was issued in 1990; isn't that correct?**

Page 82

A That's correct.
**Q Why is that?**
A It could be -- I do not recall what was the reason.
**Q Is it possible you didn't want to include Dr. Kobayashi in this paper of 507?**
A I do not recall, sir.
**Q Would you turn back to Exhibit 502.**
A (Witness complies). Okay.
**Q What is the term "Saturn" as it's used on page 196 of Exhibit 502?**
A Say that question again.
**Q What is the term "Saturn" as it appears on page 196?**
A To the best of my knowledge, Saturn was the name of this parser compiler that I was developing.
**Q What is referenced by the term rule 1, rule 2 and rule 3 of page 196?**
A Those rules came from the controller. Most likely it's a traffic controller.
**Q Are those expert rules?**
A Those are just rules that describe the behavior of the controller.
**Q Are those the expert rules that you have in your knowledge base?**

Page 83

A No, sir.
**Q What type of rules are they?**
A These rules, as on page 00196 of Exhibit 502, are rules that describe the behavior of the controller.
**Q Those rules do not incorporate expert knowledge; is that correct?**
A That's correct, sir
**Q What is the reference to Neptune on page 198?**
A Say that question again.
**Q What is the reference to the term "Neptune" on page 198?**
A Neptune is the frame base knowledge base.
**Q On the bottom of the page it says, knowledge base of Neptune. There are four lines of source code. Do you see that?**
A That's correct.
**Q What is being performed by that source code?**
A Those line of code basically store information about a particular logic gate.
**Q What type of logic gate?**
A And I believe this is a and gate -- sorry, nand gate.
**Q Is it a technology-specific gate?**
A No, it's not technology specific.

Page 84

**Q Was the Neptune knowledge base technology specific?**
A No, sir.
**Q Was it ever technology specific?**
A No, sir.
**Q Why is that?**
A It is designed to be general enough that it is technology independent.
**Q Is that true of all of your work, your base work?**
A I try to.
**Q Is that an advantage?**
A Yes.
**Q Why?**
A So that it can be portered in any environment.
**Q How do you meet delay and area constraints if they're not technology specific?**
A Say that question again.
**Q How do you meet delay and area constraints for a user's design if your database is not technology specific?**
A You have to store information according to the different types of technology.
**Q Is that information stored in Neptune?**
A You can store information about a particular

Page 85

technology, yes.
**Q But your work was technology independent?**
A That's right.
**Q Did you have expert rules in your Neptune?**
A I believe so.
**Q Were there expert rules anywhere else in your system?**
MR. SU: Objection as to form.
A Could you clarify that question again?
BY MR. OLIVER:
**Q In your KBSC system.**
A And what's the question again?
**Q Whether there were expert rules in your KBSC system, other than in the Neptune program.**
A Let me go back and look at my exhibit here.
**Q I believe the KBSC system that you referred to earlier was on Exhibit 503, page 0199.**
A Okay. Okay. Say that question again. I'm sorry.
**Q Is there expert rules in any portion of your KBSC system, other than the Neptune program?**
A Yes, sir.
**Q Where is the rules?**
A It's in one of the exhibits. It's in the program.

Page 86

**Q Which exhibit are you referring to?**
A It's not here. It's in the source code.
**Q Other than the source code, which we will get to probably after lunch, is there any expert rules in any block depicted on page 0199 of Exhibit 503, other than the Neptune program?**
A Yes, sir.
**Q Where are these expert rules?**
A The expert rules could be in the parser.
**Q When you say "could be," do you mean they were part of your invention in the parser?**
A That's correct.
**Q Okay. Anywhere else?**
A Again, I have to take a look at the program that I wrote to be more -- to be certain that I did not leave out any of the modules.
**Q What program did you write?**
A I wrote a program that was written in C that has the knowledge-based rules.
**Q Do you know the name of the program?**
A I don't remember what I called it.
**Q Did you produce the source code that you're referring to?**
A Yes, sir.
**Q I have some source code in a document titled**

Page 87

**"A Knowledge-Based VLSI Module Selector With a Built-in Database Management System." Would that help refresh your recollection?**
A That's correct.
**Q (Tendering document). Handing you what has been marked as Exhibit 511, bearing a production numbers FOO 000157 through 0183. Would you just take a moment to look at that and let me know when you're finished.**
A (Witness complies).
(Exhibit No 511 was identified for the record).
A Could you repeat that question?
BY MR. OLIVER:
**Q Other than the parser and the Neptune program, are there any other expert rules in your knowledge-based silicon compiler of figure -- or of page 0199, Exhibit 503?**
A This Exhibit 511 is only the Neptune. There is still another source code.
**Q (Tendering document). I've handed you a series of Exhibits 512, 513, 514, 515, 516, 517 and 518. They're all source code. If you would take a while to look at that and let me know when you're finished.**

Page 88

A What's the question again? What were you looking for?
**Q The question is, what expert rules appear in the KBSC system of Exhibit 503, page 0199, other than the parser and the module selector?**
**(Exhibit Nos. 512 through 518 were identified for the record).**
MR. OLIVER: Just for the record, Exhibit 512 bears production numbers FOO 000264 through 268. Exhibit 513 bears production numbers FOO 0269 through 0307. Exhibit 514 bears production numbers FOO 000308 through 3010. Exhibit 515 bears production number FOO 000311. Exhibit 516 bears production numbers FOO 000312 through 319.
Exhibit 517 bears production numbers FOO 000320 through 0322. Exhibit 518 bears production numbers FOO 000323 through 0407.
THE WITNESS: Can you repeat the question?
BY MR. OLIVER:
**Q What expert rules appear in your KBSC system of Exhibit 503, other than in the parser block and the module selection block?**
A To the best of my knowledge, those are the only -- those are the modules that I work with.
**Q When you say "that you work with," meaning --**

Page 89

A I completed.
**Q When you say "completed," meaning you --**
A Got the program -- that's exactly right.
**Q When you sketched the drawing in Exhibit 503, were the parser and module selection modules completed?**
A To the best of my knowledge, they were in the process.
**Q Do you know why you sketched the system on this page?**
A The idea was to develop a knowledge-based silicon compiler.
**Q But you were already working on the module selection and the parser at the time you sketched this drawing; is that correct?**
A That's correct, sir.
**Q Were you already working on the module selection module at the time you created figure 1 of Exhibit 502?**
A Say that question again, please.
**Q Were you already working on a module selection block at the time that you created figure 1 of Exhibit 502?**
A I was in the process, sir.
**Q When did you start creating the module**

Page 90

**selection block?**
A The idea of the module selection probably came from my master's thesis.
**Q Did it exist prior to your master's thesis?**
A No, sir.
**Q Do you know how long in time it took to create the idea for the module selection after your thesis?**
A Say that question again, please.
**Q Do you know how long it took before you created the module selection idea after your master's thesis was completed?**
A I still don't understand that question, sir.
**Q How long was it between the time you completed your master's thesis and the time you created the module selection block?**
A When you say "completed" --?
**Q When I say created, I don't mean completed, I mean came up with the idea.**
A I would say my master's thesis identified a need for a cell selection module.
**Q When did you propose a solution that met that need?**
A Could you clarify the question again.
**Q How long in time was it before you created something that would accomplish or meet that need that**

Page 91

**was identified in your master's thesis?**
A Sorry. I still don't quite understand your question.
**Q Do you know when you first conceived of the idea for a module selector?**
A My estimate would be late 1984.
**Q How can you be sure?**
A At that time I was completing my master's thesis, and one of the things I learned or found out that there is a need for module selection.
**Q Did you document your idea for a module selection?**
A I do not recall.
**Q Do you have today anything that describes your original work regarding the module selection?**
A The only --
MR SU: Objection as to form.
A The only evidence I have are produced here, sir.
BY MR. OLIVER:
**Q When you say "produced here," are you pointing to a particular exhibit before you?**
A Exhibit 503, Exhibit 502 and possibly other exhibits, including the source code and --
**Q I'm sorry.**

Page 92

A And the papers.
**Q The papers being the papers coauthored with Dr. Kobayashi?**
A That's correct, sir.
**Q Do you know when you began writing code for the module selector?**
A To the best of my recollection, the code for the module selector was initiated in late 1984.
**Q Did you conceive of the idea of a knowledge-based silicon compiler after your -- you conceived the idea of a module selector?**
A I don't recall the order of the -- you know, which comes first; is it top down or bottom up; I just don't recall.
**Q You did indicate earlier, however, that the sketch of Exhibit 503 was drawn after the module selection program was in progress; isn't that your testimony?**
A That's correct, sir.
**Q You said earlier that the master's thesis identified a need for the module selector; right?**
A I do not recall.
**Q It is what you said. Do you believe that to be accurate? If you want I could go back and actually read verbatim what you said. I asked you:**

Page 93

**Do you know when you first conceived of the idea for a module selector? You answered: My estimate would be late 1984. I asked: How can you be sure? You said: At that time I was completing my master's thesis, and one of the things I learned or found out that there is a need for module selection.**
A That's true.
**Q Was there anything that you were doing that identified a need for a knowledge-based silicon compiler?**
A Say that question again.
**Q Is there anything that you were doing, similar to the master's thesis for your module selection, that identified a need for a knowledge-based silicone compiler?**
A Yes.
**Q What was that?**
A The need to capture expertise knowledge.
**Q For module selection the need was identified in your master's thesis.**
A To the best of my recollection, yes.
**Q What identified the need for the knowledge-based silicon compiler?**
A The need for capturing the knowledge of an expert designer.

**Q What identified for you the need to capture the knowledge of an expert designer?**
A I don't understand your question. Could you say that again.
**Q For example, when you conceived of the idea for a module selector, you said, the need for such a module selector was identified in your thesis. Similarly, there must have been something like your thesis or something else, some other external information that you received that identified the need for the knowledge-based silicon compiler. Can you identify that source?**
A The --
MR. SU: Objection as to form.
A The inspiration for this knowledge-based silicon compiler came from the courses that I took with Professor Bonnell.
BY MR. OLIVER:
**Q Is there anything else that was an inspiration for the knowledge-based silicon compiler?**
A Not that I know of
**Q Was Dr. Kobayashi an inspiration for the knowledge-based --**
A I don't recall.
**Q Do you doubt that Dr. Kobayashi was the source**



**of inspiration for the knowledge-based silicon compiler?**
A Say that question again.
**Q Do you doubt that Dr. Kobayashi was the inspiration for the knowledge-based silicon compiler that you created?**
A Dr Kobayashi was not an inspiration.
**Q There is no question?**
A There is no question.
**Q You know Dr. Kobayashi and Dr. Bonnell worked together; right?**
A They were in the same department.
**Q They worked together; isn't that correct?**
A I don't recall.
**Q They collaborated on papers; right?**
A It is possible.
**Q You have no idea?**
A I don't recall.
**Q Isn't it possible that the inspiration provided by Dr. Bonnell was actually indirectly provided by Dr. Kobayashi?**
A I don't recall.
MR. SU: Objection as to form.
MR. OLIVER: Would you like to take a break for lunch?



(Lunch recess).
BY MR. OLIVER:
**Q Back on the record. Referring back to the handwritten drawings of Exhibits 502 through 506.**
A Okay.
**Q Did Dr. Kobayashi provide any contribution whatsoever to any of the pages within Exhibits 502 through 506?**
A Yes
**Q What was his contribution?**
A His contribution is editorial.
**Q Can you provide us with an example of what edits he may have made?**
A For example, how the -- the blocks are arranged.
**Q Are you referring to Exhibit 502?**
A That's correct. Referring to figure 1 of Exhibit 502, which is on page 00192.
**Q What was his contribution?**
A Was in the arrangements of blocks.
**Q Cosmetically or technically?**
A Cosmetically.
**Q Anything else?**
A Not that I know of.
**Q Dr. Kobayashi, according to your testimony,**



**was not the source of any ideas conveyed in your Exhibits 502 through 506; is that correct?**
A I don't recall.
**Q Is it possible that he provided you with any of the ideas described in 502 through 506?**
A To the best of my knowledge, this is my original work, and his contribution was editorial.
**Q You indicated that after your master's thesis you were writing or headed towards a dissertation on cell selection; is that correct?**
A That's correct.
**Q Why didn't you attempt to write a dissertation on your knowledge-based silicon compiler?**
A Because at that time I think the biggest need is a cell selection.
**Q Wasn't the cell selection that you developed part of the KBSC system?**
A It was meant to be, that's correct.
**Q How could there be a need for the cell selection if there was no KBSC system to begin with?**
A The -- according to the best of my knowledge, the KBSC and the cell selection have a lot of things in common, which is the knowledge base.
**Q The knowledge base was part of your master's thesis; is that correct?**

Page 98

A That's incorrect.
**Q Why didn't you write a dissertation on the knowledge base?**
A The knowledge base alone would not be sufficient.
**Q Why is that?**
A You got to have something to -- you may have a theory. You've got to have some application to prove your theory.
**Q Wouldn't application of the knowledge base to VLSI design be sufficient?**
MR. SU: Objection to form.
A The VLSI design is pretty general. You have to be a little bit more specific.
BY MR. OLIVER:
**Q How is the cell selector applied to VLSI design?**
A The cell selection is part of the VLSI process.
**Q Wouldn't the knowledge base be part of that same process?**
A The knowledge base is just one avenue to accomplish that cell selection.
**Q Are you saying that your topic of cell selection was not utilizing a knowledge base?**

Page 99

A Say that again.
**Q That your topic of cell selection was not utilizing a knowledge base?**
A The topic of cell selection?
**Q For your dissertation?**
A That's incorrect. That's not true.
**Q You indicated earlier that the topic of VLSI design was too broad for you to sufficiently craft a dissertation topic based on a knowledge base; isn't that correct?**
A That's not correct That's not what I said.
**Q What did you say?**
A I said the topic of just VLSI design using knowledge-based systems is too broad of a title of a topic to begin with.
**Q Why, when nobody had done it before?**
A According to my -- to the best of my knowledge, to have a Ph.D. dissertation, you have to be very specific. It has to be non -- it cannot be of a broad nature.
**Q Well how is having a cell selection in VLSI design narrower?**
A That would be a specific task.
**Q Why? What's the difference?**
A Because you're talking about a very specific

Page 100

task of the VLSI design process.
**Q Having a knowledge base to select cells, wouldn't that be a narrow task?**
A Yes.
**Q Why didn't you do a dissertation on having a knowledge base to select cells?**
A Yes. As a matter of fact, that was my original goal was to have a knowledge-based, you know, system for cell selection.
**Q Did you have any evidence that that was your original dissertation?**
A I don't have, other than the papers that I wrote.
**Q What papers did you write?**
A Exhibit 510, Exhibit 509, Exhibit 508 and my handwritten notes.
**Q Do any of these exhibits, which include Exhibits 502 through 506 for the handwritten notes, and publications 508 through 510, mention your potential dissertation?**
A The word "dissertation" is not on the notes.
**Q Did you tell anyone, other than Dr. Kobayashi, that it was your intent to have a dissertation involving cell selection?**
A I do not recall.

Page 101

**Q Exhibit 510 was not published; is that correct?**
A That's correct.
**Q Why wasn't it published?**
A We, Dr. Kobayashi and I, we were in the process of submitting this manuscript for publication when we parted ways.
**Q What year was Exhibit 510 created?**
A To the best of my recollection, this is -- manuscript is written in -- initially in '85, '86, and it became a polished form in early '87.
**Q What contribution, if any, did Dr. Kobayashi make to Exhibit 510?**
A Editorial.
**Q Would you turn to page 254 of Exhibit 510.**
A (Examining document). Okay.
**Q What are the terms "74193" at the top?**
A Say that again. What's your question?
**Q The term "74193," or the number "74193" is represented at the top as an instant selected. Do you see that?**
A Okay.
**Q What is represented by that number?**
A That is a cell.
**Q What is that cell?**

A It's an integrated circuit.
**Q Is it an integrated circuit produced by Texas Instruments?**
A Possibly.
**Q You don't know?**
A That number, 741 series is typically is a digital component.
**Q What is represented by the number 74173 in the next block down?**
A Say that again.
**Q What is represented by the number 74173 in the next block down on page 254?**
A It is a different component. It's a different IC component.
**Q When you say "IC," you mean chip?**
A That's correct.
**Q Integrated circuit?**
A That's correct.
**Q What is represented by the collection of these instances which appear as figure 4 on page 254?**
A This would be a list of integrated circuit blocks that have been selected by my program, Neptune, to implement a particular function.
**Q The output of Neptune would therefore be an identification of these 74 series integrated circuit**



**parts?**
A That's correct, sir.
**Q Would the output of figure 4 on that page be representative of the type of output of Neptune at the time that you and Dr. Kobayashi parted ways?**
A Say that again.
**Q Would the output of figure 4 be representative of the type of output of your program Neptune at the time that you and Dr. Kobayashi parted ways?**
A That's correct.
**Q The source code, which I believe we've labeled Exhibits 513 through 518, were produced by printing out files from your computer at the Florida State University; is that correct?**
A That's correct, sir.
**Q Do you know the revision date on your computer for these files, Exhibits 513 through 518?**
A I do not recall what the revision date is.
**Q Would the revision date be the date in which you loaded them on your computer?**
A No.
**Q What date would they be?**
A The revision date would be the date that I make changes to the program.
**Q Did you create those programs on your computer**



**in Florida State University?**
A No, sir.
**Q How would the revision date maintain the oldest revision from some other computer?**
A Whenever you rename -- copy files, you download files from one computer to another, depending on the system, they will automatically change the date on your file -- on your electronic file.
**Q Was the revision date -- strike that. Are you saying that whenever you copy the file from one computer onto another, the revision date would change?**
A Possibly, yes.
**Q Did that revision date change for Exhibits 513 through 518?**
A Possibly.
**Q You don't know for sure?**
A I don't know for sure.
MR. SU: Just for the record, Exhibit 518 contains pages that don't look like code to me. So I just want to make sure the record is clear as to whether the witness is saying that all of this came from the printout or not.
BY MR. OLIVER:
**Q Would you please take a look at Exhibit 518.**
A Okay.



**Q Did all of the pages making up Exhibit 518 come from your computer at Florida State University?**
A No, sir.
**Q Are you able to identify the portions of Exhibit 518 that came from your computer at Florida State University?**
A No, sir.
**Q Did any pages of Exhibit 518 come from your computer?**
A Say that again
**Q Did any pages of Exhibit 518 come from your computer?**
A When you say "come from my computer," where?
**Q At Florida State University.**
A You mean what's created; do you mean it was created --
**Q Produced by printing out from your computer the way in which Exhibits 513 through 517 were produced.**
A Okay. These pages were printed out at Florida State University, that's correct.
**Q When you say "these pages," which pages?**
A Pages on Exhibit 518, pages 000323 through 00338.
**Q Any other pages?**

Page 106

A Not in this Exhibit 518.
**Q Where did the remaining pages of Exhibit 518, which are pages 0339 through 0407, come from?**
A Say that again.
**Q Where did the remaining pages of Exhibit 518, which are pages 0339 through 0407, come from?**
A Say that again. I'm sorry.
**Q Pages 0339 through 0407.**
A Okay.
**Q Exhibit 518, where did those pages come from?**
A These pages, part of them came from my master's thesis defense slides, and part of it came from my own personal notes
**Q Handing you what has been previously marked as Exhibit 39. Would you take a moment to review Exhibit 39 and let me know when you've finished?**
A (Witness complies). Okay.
**Q Do you recognize Exhibit 39?**
A Yes, sir.
**Q When did you first see Exhibit 39?**
A I first came across this document, which was e-mailed to me by one of the attorneys at Shapiro, Weinstein.
**Q Do you remember the date?**
A I do not know the exact date, but I -- to the best of my recollection, I believe it's in 2002.
**Q Did you review it at that time?**
A Yes, sir.
**Q Did you have a subsequent conversation with Mr. Weinstein?**
A Yes, sir.
**Q Do you recall what you discussed?**
A I told him that I was very disappointed.
**Q Why were you disappointed?**
A Because when I look at his patent, I realize that my former advisor had not -- had purposely left out my name on this patent.
**Q You weren't disappointed, however, when you were working for him at ICC, and he was working on the very same system that was patented; right?**
A That's correct.
**Q Why weren't you disappointed then?**
A I was not aware that he was going to seek a patent on this.
**Q But you were aware that he was commercializing it, the idea; right?**
A I was taking orders from him.
**Q Well why are you not disappointed when he was going to make money from selling the product that you invented, but yet you were disappointed when you see that he was awarded a patent?**
A At that time I was his Ph.D. student, and I did not want to risk not being able to graduate.
**Q Subsequently you changed advisors, and you were no longer his student. Were you then disappointed in him for trying to commercialize his product?**
A I am not aware of any -- anything that transpired after I switch advisors.
**Q But you knew all along that he was continuing to work on the KBSC system; right?**
A I don't recall.
**Q Would you turn to column 16 of Exhibit 39.**
A Column 16.
**Q By the way, do you have any patents in your own name?**
A Excuse me?
**Q Do you have any patents in your own name?**
A No, sir
**Q Did you ever apply for any patents?**
A No, sir.
**Q Why is that?**
A I guess I don't have the knowledge to apply for a patent.
**Q Column 16.**
A Okay.
**Q Have you reviewed claim 13, which appears around line 34 of column 16, particularly lines 34 through 65?**
A (Examining document). Okay.
**Q My questions I will be referring to different claim elements. Do you understand the term "claim elements"?**
A I'm not sure.
**Q For our purposes there will be a reference to claim elements, and there are six different claim elements in claim 13. The claim elements are: Storing a set of definitions, which appears on line 37; storing data describing a set of available integrated circuit hardware cells, which starts on line 39; storing in an expert system knowledge base, which appears at line 42; describing for a proposed application-specific integrated circuit, which appears at line 45; specifying for each described action and condition, which appears at line 48; and selecting from said stored data for each of those specified definitions, which begins at line 52.**
**Do you see all those claim elements?**
A Yes, sir.
**Q Which one or more of these claim elements do**

Page 110

**you believe you invented?**
A May I mark it?
**Q Yes, please do. Did you finish?**
A Yes.
**Q May I take a look?**
A (Tendering document).
**Q Just for the record, and please correct me if I'm wrong, you identified on Exhibit 39 in response to my question, the elements starting on line 39 of column 16: Storing data describing a set of integrated hardware cells; the element starting at line 42, storing in an expert system knowledge base, and the element starting at line 52, selecting from said stored data; is that correct?**
A That's correct, sir.
**Q Are there any other elements of claim 13 that you believe you invented?**
A I don't recall.
**Q Would you take a moment to look at all of the claims of this patent, which are claims one to 20, and let me know if there are any other elements that you believe you invented?**
A May I mark on it?
**Q Yes, please.**
A (Examining document). Okay. It's completed.

Page 111

**Q Can I take a look?**
A Okay (tendering document).
**Q Starting with claim one, you have a mark at the beginning, which is known as the preamble. Is there an indication that you --**
A I guess I'm not clear if everything under claim one belongs to one, or do I need to separate them?
**Q Just for the purposes of our question, when I refer to "claim elements," it will be any type of --**
A Oh, okay.
**Q -- indention or paragraph that has this type of indention.**
A Okay. I see
**Q For example, claim one at line 36 is one element, and line 39 is another element.**
A Okay.
**Q And the same fashion as we did for claim 15.**
A Okay. Let me correct that.
**Q That's the same for all the claims.**
A Okay. Maybe I use a different pen.
**Q This is your pen here.**
A Okay.
**Q May I take a look?**
A Yeah. The ones that I bubbled are the ones

Page 112

that I picked, the ones crossed out I crossed out.
**Q (Examining document). I will read into the record, and you can confirm it.**
A Okay.
**Q You indicated for claim one, which starts on column 14, line 32, you indicated the element, a cell library, starting at line 47?**
A That's correct, sir.
**Q And at line 50, the cell selection means; is that correct?**
A That's correct.
**Q Did you not identify anything in claims two, three, four or five; is that correct?**
A To the best of my knowledge, that's correct, sir.
**Q In claim six, I assume you indicated the entire clause in claim six and claim seven; is that correct?**
A That's correct, sir.
**Q You did not indicate anything in claim eight. In claim nine you also identified the cell library, which begins approximately line 46 of column 15.**
A Yes, sir.
**Q And the cell selection meanings, which appears to start at line 48 of count 15; is that correct?**

Page 113

A That's correct.
**Q Column 16, you did not indicate anything for claim ten; is that correct?**
A That's correct.
**Q For claim 11 you indicated also the cell library, which appears to begin at line 18, and the knowledge base, which appears to begin at line 21; is that correct?**
A That's correct.
**Q You did not indicate anything for claim 12; is that correct?**
A That's correct.
**Q We discussed claim 13. Claims 14, 15, 16 and 17 you did not indicate anything; is that correct?**
A Say that again.
**Q Claims 14, 15, 16 and 17 you did not indicate anything; is that correct?**
A To the best of my knowledge, that's correct.
**Q For claim 18 you identified the storing in a cell library element, which appears to begin at line 16, and the storing in a knowledge base element, which begins to -- which appears to begin at page 19 -- line 19; is that correct?**
A That's correct, sir
**Q You did not indicate anything for claims 19**

Page 114

**and 20; is that correct?**
A That's correct, sir.
**Q Did you invent the claim elements that you identified in claim 13, which, again, are the storing data describing a set of available integrated circuit hardware cells beginning at line 39; the storing in an expert system knowledge base, which begins at line 42, and the selecting from said stored data, which begins at line 52 of column 16, all at the same time?**
MR. SU: Objection as to form.
A I do not recall if it's all done at the same time.
BY MR. OLIVER:
**Q Do you know when you invented the storing data describing a set of available integrated circuit hardware cells element, which begins at line 39?**
A To the best of my knowledge, it would be in 1984 through '86.
**Q When you say "through," what do you mean?**
A The time period between 1984 and 1986.
**Q Did you invent them during that entire period, or did you mean that you invented them at some point between '84 through '86?**
A At some point between '84 and '86, sir.
**Q Do you know if you invented -- strike that.**

Page 115

**Is it possible that you invented the element that began at line 39 somewhere within 1986?**
A I do not recall, sir.
**Q Is it possible that you invented it towards the end of 1986?**
A I do not recall.
**Q Do you recall when you invented the element that begins at line 42 or the element that begins at line 52?**
A What's your question again?
**Q Whether you recall the date in which you invented either the element that begins at line 42 or the element that begins at line 52?**
A Say that question begin.
**Q Do you recall when you invented the element that begins at line 42?**
A To the best of my knowledge, those were invented during the period of between 1984 and 1986.
**Q Is that the same time period in which you invented the element of selecting from said stored data, which begins at line 52 of column 16?**
A Say that again.
**Q Did you invent the element that begins at line 52 in the time period 1984 through 1986?**
A That's correct. Let me clarify this. The

Page 116

three items under line item number 13 were --
**Q You mean claim 13?**
A Yeah, claim 13.
**Q Yes.**
A -- were invented during the period between 1984 and 1986
**Q At some point --**
A At some point, that's correct.
**Q -- between '84 and '86?**
A Yes. Although I cannot pinpoint a specific date
**Q Do you have any evidence of this invention of any of the elements that you identified in claim 13, which are the ones that begin at lines 39, 42 and 52?**
A Yes, sir.
**Q What is your evidence?**
A The evidence is my hand notes and the computer programs and the papers that I wrote.
**Q Just to be clear for the record, the evidence of invention is the handwritten notes which we have marked as Exhibits 502 through 506?**
A That's correct.
**Q The computer programs identified as Exhibits 511 through 518, and which publications?**
A The publications, Exhibit 508 and Exhibit 509.

Page 117

**Q Any other publications?**
A And Exhibit 510, the unpublished manuscript.
**Q Any other publications?**
A Exhibit 507.
**Q Any other publications?**
A To the best of my recollection, that was all.
**Q For all of the other elements you identified in claims one through 12, if any, and 14 through 20 of the 432 patent, which is Exhibit 39, is the evidence of your invention found in those same exhibits which are 502 through 506, 511 through 518, 507 through 510?**
A Say that question again, please.
**Q For all the other elements that you identified on Exhibit 39 for claims one through 12 and claims 14 through 20, are you relying on the same evidence of invention as you did for claims -- for the claim elements of claim 13?**
A Say that again. Sorry.
**Q Are you relying for proof of your invention of the claim elements you identified in the 432 patent with respect to claims one through 12 and 14 through 20, if any?**
A Are those the ones that I did not mark?
**Q You identified several elements on Exhibit 39 within certain claims, one, six, seven, nine, 11 and**

Page 118

**18; is that correct?**
A Sorry. I still don't quite understand your question.
**Q As we confirmed, you had marked in Exhibit 39 certain claim elements that you believe you invented with respect to claims one, six, seven, nine, 11 and 18; is that correct?**
A I still don't understand that question.
**Q The question is simply, did you identify claim elements --**
A Could we do one at a time instead of, you know, a range of numbers?
**Q Well, sure. Did you identify elements in claim one?**
A Yes, sir.
**Q Did you identify elements in claim six?**
A Yes, sir.
**Q Did you identify elements in claim seven?**
A Yes, sir.
**Q Did you identify elements in claim nine?**
A Yes, sir.
**Q Did you identify elements in claim 11?**
A Yes, sir.
**Q Did you identify elements in claim 18?**
A Yes, sir.

Page 119

**Q Other than claim 13, you did not identify any other -- I'm sorry, strike that.**
**Did you identify elements in any other claim that I did not -- strike that. You did not identify anything in claim two; is that correct?**
A That's correct.
**Q You did not identify anything in claim three; is that correct?**
A That's correct.
**Q You did not identify anything in claim four; is that correct?**
A That's correct.
**Q You did not identify anything in claim five; is that correct?**
A That's correct.
**Q You did not identify anything in claim eight; is that correct?**
A That's correct.
**Q You did not identify anything in claim ten; is that correct?**
A That's correct.
**Q You did not identify anything in claim 12; is that correct?**
A That's correct.
**Q You did not identify anything in claim 14; is**

Page 120

**that correct?**
A That's correct.
**Q You did not identify anything in claim 15; is that correct?**
A That's correct.
**Q You did not identify anything in claim 16; is that correct?**
A That's correct.
**Q You did not identify anything in claim 17; is that correct?**
A That's correct.
**Q You did not identify anything in claim 19; is that correct?**
A That's correct.
**Q You did not identify anything in claim 20; is that correct?**
A That's correct And I would like to add that I did not identify them based on the best of my knowledge.
**Q For the claim elements that you did identify other than those in claim 13, are you relying on the evidence of invention that you've relied on for the claim elements of claim 13?**
A Say that again.
**Q For the elements that you identified in all**

Page 121

**the claims, other than claim 13, are you relying on the same evidence of invention as you are relying on for the claim elements you identified in claim 13?**
A That's correct.
**Q Do you want to take a break?**
A Yeah, yeah.
(Short recess).
THE WITNESS: I would like to make two clarifications. One, the first clarification is that I was not aware of the pending patent in the works while I was working under Kobayashi, and I was not aware of the patent even after I quit working with Dr. Kobayashi.
The second clarification is, during the break I was recollecting my thoughts, and I realized that I had done other contributions too besides the one that I specified that I mark on this document. And if I may, I would like to go back and look at my handwritten notes and identify them.
BY MR. OLIVER:
**Q Of course. Just to be clear, you're going to identify them in the handwritten notes or in the patent?**
A Well I didn't find them in the patent.
**Q By looking at your notes; right?**

A That's correct.
**Q Please do so.**
A Thank you.
**Q While you're doing that, I want to mark as Exhibit 519 the marked-up copy of Exhibit 39, which is the 432 patent, just so there is a record of your annotations.**
**(Exhibit No. 519 was identified for the record).**
THE WITNESS: You don't mind if I take a call? It could be an urgent call.
MR OLIVER: Sure.
(Discussion off the record).
A Mr. Oliver, I believe there are some more evidence that I have produced that were not shown here, other exhibits, I believe.
BY MR. OLIVER:
**Q What --**
A Hand -- hand-sketched documents.
**Q Do you know what was on the hand-sketched diagram?**
A Let me see.
**Q I have something here which is some kind of a draft of an article that also has some attached --**
A That's correct. That's the one I was looking



for.
**Q I apologize. I didn't realize this was a hand-drawn attachment. I will mark that as Exhibit 520.**
**(Exhibit No. 520 was identified for the record).**
**Q Exhibit 520 bears production numbers FOO 00184 through 0188.**
A (Examining document). Okay. I'm finished, sir.
**Q May I take a look?**
A Yes (tendering document). The ones that I have bubbled and put a checkmark next to it or underneath it is the one that I have just added.
**Q For the record, it appears that you've identified all of the elements of claim one; is that correct?**
A May I see it? Say the question again.
**Q You now appear to have identified all the claim elements of claim one; is that correct?**
A That's correct, sir
**Q That's quite a change from your earlier testimony; isn't it?**
A That's correct.
**Q Why did you make that change?**



A On the recollection, when I was answering your question earlier, I forgot that I have the additional notes that were just produced to me.
**Q Exhibit 520?**
A That's correct, sir.
**Q What in Exhibit 520 informed you that you also invented these other elements that you identified?**
A Exhibit 520, along with my handwritten notes from other exhibits, made me realize that I have done more than I put down earlier.
**Q So essentially you invented everything in this claim; is that correct?**
A I would not say everything.
**Q What did you not invent in claim one?**
A Say that again.
**Q Essentially you invented everything in claim one; isn't that correct?**
A That's correct, yes.
**Q Did you invent everything in claim 13?**
A That's correct.
**Q Although you didn't identify everything in claim 13?**
A Wait a minute. Wait a minute. I would like to make a correction right here. The first one I would like to make a claim on that, too, so



essentially will be all of --
**Q So you now claim to have invented everything in this claim 13?**
A That's correct, sir.
**Q And you never told anybody about your invention; is that right?**
A That's correct.
**Q You didn't tell anyone?**
A The only person who might know about it would be my advisor at that time.
**Q And how did you tell him?**
A I gave him the example figure 1 of Exhibit 542.
**Q You gave that to him?**
A That's correct, sir.
**Q Did you give all of your sketches, which are Exhibits 502 through 506 and Exhibit 520?**
A I don't recall.
**Q Do you know for sure you gave Exhibit 502?**
A I know, to the best of my recollection, I gave figure 1 of Exhibit 502 to Dr. Kobayashi.
**Q Did you give the figure page 199 of Exhibit 503 to Dr. Kobayashi?**
A I don't recall, but I do recall discussing a lot of my ideas with him.

Page 126

**Q Do you recall discussing all of the elements depicted in Exhibit 503?**
A Very likely.
**Q Likely or for certain?**
A Very likely. I do not recall all the details.
**Q What evidence do you have to show that you actually discussed those elements with him?**
A Say that question again.
**Q What evidence do you have to show that you actually discussed the elements of Exhibit 503 with Dr. Kobayashi?**
A The only thing I can think of is the revisions to this sketch
**Q What revisions are you talking about?**
A I'm talking about the scratches, for example, on page 000199 on Exhibit 503.
**Q Yes.**
A You can see that I have scratched out some of the -- for example, the control flow graph.
**Q Yes.**
A That typically comes from my discussions with my advisor.
**Q Is that his handwriting?**
A No. No, sir
**Q Is that your handwriting?**

Page 127

A That's my handwriting.
**Q Is that your hand scratching out of the control flow graph?**
A That's my handwriting. That's right.
**Q Why is the control flow graph scratched out on Exhibit 503?**
A It was just based on my idea at that time.
**Q How does that relate to your conversation with Dr. Kobayashi?**
A Again, I do not recall the exact conversation.
**Q And you're not certain whether or not you actually disclosed Exhibit 503 to Dr. Kobayashi; is that correct?**
A Say that again.
**Q You're not certain that you actually disclosed Exhibit 503 to Dr. Kobayashi; is that correct?**
A It is highly probable that I have shown him and discussed with him.
**Q You cannot be positively certain, however; is that correct?**
A That's correct.
**Q You can be certain, however, that you showed him Exhibit 502, page 0192; is that correct?**
A To the best of my knowledge, yes.
**Q Are there any other hand drawings or pages**

Page 128

**within these Exhibits, 502 through 506, that you can say with certainty that you showed Dr. Kobayashi?**
A (Examining document). I would say Exhibit 503, page 000200, Exhibit 504, page 000204, and under the same exhibit, page 000205, 206, 207, 208, 209, and that's it. And Exhibit 506, page 000256, 257, 258 and 259 through 263, which is basically the entire exhibit; Exhibit 502, page 000192, 193, 194, 196, 197 and 198; Exhibit 514, the entire exhibit of 514; Exhibit 515.
**Q The entire exhibit?**
A That's right. That's only one page, 515. And I believe that's all the exhibits.
**Q All the other pages that you did not identify you cannot be certain whether or not you disclosed them to Dr. Kobayashi; is that correct?**
A That's correct.
**Q For the pages and exhibits that you did identify, how can you be so certain that you did disclose them to Dr. Kobayashi?**
A I usually shared with him my ideas to get some feedback.
**Q How do you know for certain that the individual pages that you identified were pages that you showed to Dr. Kobayashi?**

Page 129

A Based on the papers that were published.
**Q Why is that?**
A The reason is, some of the papers that were published have some schematics and ideas that came from the notes.
**Q When you say you showed Dr. Kobayashi these hand drawing pages that you identified, were they first showed to Dr. Kobayashi in a draft of some papers?**
A I do not recall.
**Q Is there any other reason why you can be so certain that you showed Dr. Kobayashi any of your pages or papers that you identified?**
A It's based on the corrections on the handwritten notes.
**Q And those corrections were your own corrections; is that correct?**
A That's correct, sir.
**Q You would not have made those corrections without discussing it with Dr. Kobayashi; is that your testimony?**
A Say that again.
**Q You would not have made those corrections without talking to Dr. Kobayashi; is that your testimony?**

Page 130

A That's not true.
**Q You could have made those corrections without Dr. Kobayashi's input; is that correct?**
A Possibly.
**Q So the mere fact that there were corrections on those handwritten drawings does not mean that you showed those handwritten drawings to Dr. Kobayashi; isn't that right?**
A Say that again.
**Q The mere fact that there are corrections on those handwritten drawings does not mean that you showed those handwritten drawings to Dr. Kobayashi?**
A I believe that the ones that I told you I showed to him to get his feedback.
**Q And do you believe so based on the corrections that were made?**
A More than the corrections and also the papers that were published.
**Q Is there anything else that gives you that indication?**
A That would be all.
**Q Do you know when you showed them to Dr. Kobayashi?**
A Between the time frame of 1984 and '86.
**Q Is it possible that Dr. Kobayashi was**

Page 131

**simultaneously working on the work that was ultimately patented in Exhibit 519?**
A Say that again.
**Q Is it possible that Dr. Kobayashi was independently, but yet simultaneously, working on a knowledge-based system at the same time that you were working on a knowledge-based system?**
A You mean him working by himself?
**Q Yes.**
A Not possible.
**Q Why is that?**
A The reason is, VLSI is not his background.
**Q Was VLSI your background?**
A That was my background.
**Q Were you an expert at the time?**
MR. SU: Objection to form.
A I considered myself an expert in VLSI.
BY MR. OLIVER:
**Q How many years of experience did you have in VLSI at the time?**
A I first learned of the subject matter, to the best of my recollection, would be in late 1983 or early 1984.
**Q So in less than one year, which is the time frame in which you say you may have invented the KBSC**

Page 132

**system, you became an expert, and you invented the rule-based VLSI design system; is that correct?**
A That's correct.
**Q And you never patented it; is that correct?**
A That's correct.
**Q You never documented it, other than hand sketches; is that correct?**
A That's correct.
**Q You never disclosed it to anyone other than Dr. Kobayashi?**
A That's correct.
**Q Before the time you started working for Howrey, you never mentioned it; is that correct?**
A Say that again.
**Q Up until the time you started working for Howrey in 2006, you never mentioned your invention to anyone; is that correct?**
A I still don't understand that question.
**Q It's only now that you're being paid by Howrey as a consultant that you are telling people that you invented the KBSC system; isn't that correct?**
MR. SU: Objection, argumentative.
A I don't recall.
BY MR. OLIVER:
**Q You testified that you didn't keep a lab**

Page 133

**notebook; is that correct?**
A Could you clarify what a lab notebook --
**Q I believe I asked you that before, and you said you did not.**
A That's correct.
**Q You didn't keep a journal; is that correct?**
A What do you mean by "journal"?
**Q A diary?**
A No, sir.
**Q Did you have any other inventions besides the KBSC system?**
MR. SU: Objection as to form.
A I don't recall, sir.
BY MR. OLIVER:
**Q During the period 1984 through 1986 when you invented the KBSC system, did you utilize University of South Carolina resources?**
A Could you explain what these resources are?
**Q Did you do the work at the university?**
A Would you elaborate some more what resources --
**Q When you conceived your KBSC system, did you do so utilizing any resources or materials or facilities of the University of South Carolina?**
A Yes, I did.

Page 134

**Q What did you utilize?**
A The computers.
**Q Anything else?**
A Possibly the paper.
**Q You never reduced to practice this KBSC system; isn't that correct?**
MR. SU: Objection as to form.
A Would you explain what you mean?
BY MR. OLIVER:
**Q You never created a working prototype of the KBSC system; isn't that correct?**
A Could you explain what you mean by "working prototype."
**Q You've never heard of the term "working prototype"?**
A Okay. Working to what extent?
**Q What is your definition of "prototype"?**
A Prototype means it works to some extent but still may have bugs in it.
**Q Using that definition, did you ever create a prototype of the KBSC system that you invented?**
A Not entire KBSC.
**Q Any part of the KBSC system?**
A Yes, I do.
**Q What part?**

Page 135

A The -- I believe it's the parser and the cell selector
**Q You never created the entire system; is that correct?**
A I --
MR. SU: Objection as to form.
A I don't recall.
BY MR. OLIVER:
**Q You have no evidence of creating a prototype; isn't that correct?**
MR. SU: Objection as to form.
A I do not recall, sir.
BY MR. OLIVER:
**Q You produced in this litigation source code for the selector model -- module, but not for the entire KBSC system; isn't that correct?**
A I produced a code for parts of the KBSC.
**Q What parts?**
A The parser, the module selector.
**Q Anything else?**
A And the frames database system.
**Q Anything else?**
A There may be others that I do not recall at this time.
**Q That you produced?**

Page 136

A I don't have any documents right now.
**Q So just so the record is clear, you only produced source code for the parser, the cell selector and the frame-based database; is that correct?**
A That's correct.
**Q When you conceived of the KBSC system, did you do so utilizing any resources from ICC?**
A To the best of my knowledge, no.
**Q Were you working for ICC at the time that you conceived of the KBSC system?**
A No, sir.
**Q Did anyone at ICC direct you to invent the KBSC system?**
A No, sir.
**Q Do you believe that Dr. Kobayashi left you off of the 432 patent, which is now Exhibit 519, intentionally?**
A Yes, I do.
**Q What was his motive?**
A To the best of my knowledge, I believe he was very bitter that I, you know, left him.
**Q So bitter that he filed a patent without your knowledge?**
A Possibly.
**Q So bitter that he created an entire**

Page 137

**corporation based on your system; right?**
A That's not correct.
**Q Oh, the corporation wasn't based on your system?**
A No. I say he did not create the corporation just because I left him.
**Q The corporation existed before you left him; right?**
A That's correct.
**Q He was already attempting to commercialize a KBSC system; isn't that correct?**
A Say that again.
**Q Dr. Kobayashi was already trying to commercialize a KBSC system before you left him; right?**
A Say that again.
**Q When you began working for him in 1986, he was already working on a KBSC system; wasn't that correct?**
MR. SU: Objection as to form.
A I did not start working for him in '86.
BY MR. OLIVER:
**Q Oh, when did you start working for him, for ICC? Step back. When I say "working for him," I meant working for him as an employee or consultant to ICC.**

Page 138

A Okay. Okay.
**Q So my question is, when you started working for ICC under Dr. Kobayashi in 1986, Dr. Kobayashi was already trying to commercialize a KBSC system; isn't that correct?**
A I'm not aware of.
**Q You were working on the module selector; isn't that right?**
A I was working on -- that's correct.
**Q Module selector was used for the KBSC system; isn't that correct?**
A That's correct.
**Q Was it used for any other system?**
A Possible.
**Q Do you know of any other application for the cell selector?**
A Possible.
**Q Could it be used for any non-rule-based system?**
A Possible.
**Q So the cell selector is not critical to the KBSC system; is that correct?**
A That's not correct.
MR. SU: Objection as to form.
BY MR. OLIVER:

Page 139

**Q Who did you work with at ICC?**
A Can you clarify, what do you mean by "who do you work with"?
**Q Names of people you worked with while at ICC.**
A Toro (phonetic) Ozeki and a few others that I have, you know, I've forgotten the names.
**Q Do you know what Mr. Ozeki was doing?**
A Yes.
**Q What was he doing?**
A His role was routing and placement.
**Q Routing and placement of what?**
A Of cells, modules.
**Q For a KBSC system?**
A That's correct.
**Q Your KBSC system?**
A Uh-huh.
**Q Do you know what the others were working on?**
A I do not recollect what the other students are working on.
**Q Did anyone ever go to you for advice as to how to build a prototype for the KBSC system?**
MR. SU: Objection as to form.
A I do not recall, sir.
BY MR. OLIVER:
**Q Is there any other reason why you believe**

Page 140

**Dr. Kobayashi left you off of the 432 patent?**
A Say that question again.
**Q Is there any other reason, other than the fact that he was bitter for you having left him, for Dr. Kobayashi to leave you off of the 432 patent?**
A Say that again.
**Q Is there any other reason, other than the fact that Dr. Kobayashi was bitter for you having left him, that Dr. Kobayashi would have intentionally left you off of the 432 patent?**
A I do not know.
**Q Do you have any evidence that Dr. Kobayashi intentionally left you off the patent?**
A I do not know.
**Q You have no written documentation that Dr. Kobayashi intentionally left you off the patent; isn't that correct?**
A That's correct.
**Q You have no real basis for stating that Dr. Kobayashi intentionally left you off the patent; isn't that correct?**
A Say that again.
**Q You have no real indication that Dr. Kobayashi intentionally left you off the patent; isn't that correct?**

Page 141

MR. SU: Objection as to form.
A I do not know the answer to that question.
BY MR. OLIVER:
**Q And you don't know whether or not you have any proof that he intentionally left you off the patent?**
A I do not know of any proof.
**Q You don't have any proof; isn't that correct?**
A That's correct.
**Q Isn't it possible that he truly believed that this work was his own work and the work of his joint inventor?**
A Say that again.
**Q Isn't it possible that Dr. Kobayashi truly believed that the work that was patented was the work of his own and his co-inventor?**
A Could you rephrase that?
MR. SU: Objection as to form.
BY MR. OLIVER:
**Q Isn't it possible that Kobayashi believed that he was the true inventor, along with his co-inventor, on the 432 patent?**
A I do not know the answer to that.
MR. SU: Objection as to form.
BY MR. OLIVER:
**Q Handing you what has been previously marked as**

**Kobayashi Exhibit No. 4, would you -- I'm sorry, bearing production numbers KBSC 0001 through 0028. Would you take a moment to review that document and let me know when you've finished.**
A Okay (examining document). Okay.
**Q Do you recognize Exhibit 4?**
A Could you explain, what do you mean by "recognize"?
**Q Have you seen it before?**
A No, sir.
**Q This is an agreement bearing the date January 15, 1987. Were you working at ICC at the time?**
A Say that again.
**Q Were you working at ICC at the time of January 15, 1987?**
A It is possible.
**Q Would you please turn to appendix A, which starts on page 0009 of Exhibit 4.**
A Okay.
**Q Do you recognize any of the elements listed as one through nine on that page?**
A Yes.
**Q Did you invent any of the elements shown on that page?**
A Yes.



**Q What elements did you invent?**
A I believe, to the best of my knowledge, would be the AAF translator, the cell selector and the netless generator, and possibly elements of the controller equation generator and the cell generator.
**Q When you made that clarification after the break, did you do so because your attorney advised you to make that clarification?**
A No, sir.
**Q Did you make it on your own volition?**
A Say that again
**Q Did you make it on your own?**
A Yes, sir.
**Q Did you write the Neptune program yourself?**
A That's correct, sir.
**Q Did anyone help you?**
A No, sir.
**Q Who is Stuart Anderson?**
A I don't quite remember him.
**Q Would you turn to pages 024 and 025 of Exhibit 4?**
A Okay.
**Q 024 has the title "Cell Selector."**
A Uh-huh.
**Q At the top of page 025 there is a program**



**named Neptune.**
A Uh-huh.
**Q Does the cell selector on page 024 and the Neptune program, 025, reflect your invention?**
A Say that again.
**Q Did you invent the cell selector on page 024 and the Neptune program of 025?**
A Yes, sir.
**Q Is the Neptune used for cell selection?**
A Yes, sir.
**Q Why is Stuart Anderson listed on page 025 as the designer with you of Neptune?**
A I do not know, sir.
**Q You don't know?**
A I don't know.
**Q Isn't it possible that the Neptune program that is listed in this document is not your Neptune program?**
A That's not possible.
**Q Why is that?**
A I'm the person who wrote that program.
**Q Isn't it possible that Stuart Anderson revised the program to make it marketable?**
A I do not know the answer to that.
**Q Other than the name "Neptune," you have no**



**idea whether or not the program was ever used in any product of ICC; isn't that correct?**
A Say that again.
**Q Other than the name "Neptune," shown on this page, you have no idea whether or not the program that you know to be Neptune was ever used?**
A I do not know that.
**Q In fact you have no idea whether any of the work that you did ultimately was reduced to practice into a working prototype; isn't that right?**
A I do not know.
**Q You don't know whether or not the 432 patent was based on a working prototype that was made long after you had left Dr. Kobayashi; isn't that right?**
MR. SU: Objection as to form.
A I do not know the answer to that.
BY MR. OLIVER:
**Q Is it your testimony that the Neptune program was completed as of January 15, 1987?**
A Say that again.
**Q Is it your testimony that the Neptune program was already completed by 1987, January 15, 1987?**
A Could you clarify by what you mean by "completed"? Completed totally bug free or completed --?

Page 146

**Q Was it operable?**
A Definitely it was operable.
**Q Did it perform cell selection?**
A Yes.
**Q And at the time you did it independently; isn't that correct?**
A Say that again.
**Q At the time you created the Neptune program independently; isn't that correct?**
A That's correct.
**Q Would you turn to page 028 of Exhibit 4. There is a row towards the bottom that says "cell selector"; do you see that?**
A Yes, I do.
**Q Did you write the specification for the cell selector?**
MR. SU: Objection as to form.
A I do not recall.
BY MR. OLIVER:
**Q In fact, this page indicates that the cell selector specification had not yet been fixed and would be fixed two months from the schedule listed; isn't that correct?**
MR. SU: Objection as to form.
A I do not recall.

Page 147

BY MR. OLIVER:
**Q According to this table, the development of the cell selector wouldn't be finished for another six months; isn't that correct?**
A I do not recall, sir.
**Q And in fact the cell selector would not be debugged, finished and document writing finished until eight months later; is that correct?**
A I do not recall.
MR. SU: Objection as to form
BY MR. OLIVER:
**Q Do you have any doubt that this timetable is accurate?**
MR. SU: Objection as to form
A I do not recall, sir.
BY MR. OLIVER:
**Q Would you turn back to Exhibit 508? This is the knowledge-based system article.**
A Okay.
**Q You don't make reference to a knowledge-based selecting compiler in this article; do you?**
A Say that again
**Q You do not make any reference to a knowledge-based silicon compiler in this article; isn't that correct?**

Page 148

A According to page 180 -- I'm sorry -- page 916 of this Exhibit 508, to the best of my knowledge there is no reference to any knowledge-based system.
**Q The bottom of page 914, the last paragraph, it starts with the phrase, heuristic rules. Do you see that? What do you mean by heuristic rules?**
A Heuristic rules are rule of thumbs.
**Q Are heuristic rules synonymous with expert rules?**
A Possibly
**Q Did you intend the term "heuristic rules" to refer to expert rules?**
A Say that again.
**Q In your article on page 914, when you use the term "heuristic rules," did you intend to mean "expert rules"?**
A Possibly.
**Q You can't tell for certain?**
A It's quite possible.
**Q Is it quite possible that you did not mean the term to be expert rules?**
A Say that again.
**Q You said it was possible, but isn't it also possible that the term heuristic rules does not refer to expert rules?**

Page 149

A Like I mentioned earlier, the heuristic rules are rule of thumbs that experts have relied on.
**Q Experts rely on heuristic rules, but do heuristic rules embody expert design knowledge?**
A That's one way.
**Q One way?**
A Uh-huh.
**Q In this article, can you point to any expert rules?**
A On page 000914 of Exhibit 508, and in the middle of the page there are three -- I'm sorry, four lines, starting with "if," then statements, those are the rules.
**Q Are there any expert rules disclosed in Exhibit 508?**
A Any other rules?
**Q Yes.**
A Besides the one I just pointed out?
**Q Yes.**
A (Examining document). Yes
**Q What rules are --**
A That would be on page 915 of Exhibit 508, in the bottom of the first column, starting with item number six, repeat for each instance in W, and then you have the else if statements.

Page 150

**Q Are these expert rules?**
A To the best of my knowledge, yes.
**Q Any other rules in this document?**
A In item number three, the same page, if subfunction has a list of logic components, then append to list S and notified user, or else announce failure.
**Q Any other rules?**
A Item number seven and item number nine. That would be all.
**Q There is a reference to a CMUDA system on page 914 in the introduction paragraph. Do you see that?**
A Yes, sir.
**Q Do you recall the CMUDA system?**
A Yes
**Q How does that system differ from your KBSC system?**
A I do not recall the details It's been a long time.
**Q You wouldn't make reference to it unless you thought there was a difference; isn't that correct?**
A That's correct, sir.
**Q You would not publish a paper citing it or even publish the paper at all if you believed that the work was not unique; isn't that correct?**

Page 151

A That's correct
**Q Is there any doubt that you believe there was a difference between your KBSC system and the CMUDA system that was cited in your paper?**
A Say that again.
**Q Is there any doubt that you thought there was a difference between the KBSC system and the CMUDA system?**
A I do not recall.
**Q Shall we take a break?**
THE WITNESS: Sure.
(Short recess).
BY MR. OLIVER:
**Q Okay. Back on the record. When is the last time you spoke to Mr. Ozeki?**
A When you say spoke with --
**Q For any reason.**
A Are you talking about through the phone or in person?
**Q Either.**
A I believe, to the best of my recollection, the last time I spoke with Mr. Tour row Ozeki was back in 1993.
**Q Why did you speak to him?**
A I do not recall, sir.

Page 152

**Q You didn't speak to him after you had a conversation with Michael Weinstein of my office?**
A Oh, absolutely no. It was way before Michael Weinstein called me.
**Q Did you speak with anyone after you spoke with Michael Weinstein?**
A Did I speak with anybody?
**Q In connection with this litigation or Dr. Kobayashi's work?**
A No, I did not discuss it with anybody.
**Q Other than the place in routing, what else did Dr. – I mean did Mr. Ozeki do in terms of working on the KBSC system for ICC?**
A I do not know, sir.
**Q Do you believe there are any others who were left off of the inventorship of the 432 patent besides yourself?**
A I do not know --
**Q Should Mr. Ozeki have been an inventor?**
A I do not know the answer to that question, sir.
**Q Handing you what has been marked Exhibit 521, bearing production numbers FOO 000189 through 0191. This is a document entitled "Project Description for ECE 890B," spring 1986. Would you take a moment to**

Page 153

**look at that and let me know when you've finished.**
A (Witness complies). Okay. I'm ready.
(Exhibit No. 521 was identified for the record).
BY MR. OLIVER:
**Q Do you recognize Exhibit 521?**
A Yes, sir.
**Q What is it?**
A This is a project description proposal that was submitted for this class in the spring 1986.
**Q What class is this?**
A The name, the title of the class is -- I'm sorry, number of the class is ECE 890B.
**Q Who was the instructor of that class?**
A I don't recall, sir
**Q Are these your ideas depicted in Exhibit 521?**
A That's correct, sir.
**Q Where did you get these ideas?**
A Based on the courses that I've taken prior to this course.
**Q Did Dr. Kobayashi provide you with any of these ideas?**
A I do not recall, sir.
**Q You recited a document or paper authored by Dr. Kobayashi; isn't that right?**

Page 154

A That's correct.
**Q In fact it's authored by Kobayashi and Takefuji; right?**
A That's correct.
**Q Why did you cite that?**
A There was a paper that talks about the SDF.
**Q What is the SDF?**
A The state description form.
**Q And what's the SDF used for?**
A Basically the SDF is an intermediate form for describing state transitions.
**Q What is it used for?**
A It can be used to describe finite state machines.
**Q Anything else?**
A Not that I know of.
**Q You didn't invent the concept of silicon compilation; did you?**
A No.
**Q But you invented a knowledge-based silicon compilation; isn't that right?**
A To the best of my knowledge, yes.
**Q Is this a self-study course, ECE 890B?**
A I do not recall, sir.
**Q Dr. Kobayashi was the instructor; isn't that**

Page 155

**right?**
A I'm not sure. I do not recall.
**Q Do you have any reason to doubt Dr. Kobayashi was the instructor?**
A Could be, but, again, I don't have any recollection.
**Q Handing you what has been marked as Exhibit 522. This is a document bearing production numbers KBSC 0094 through 1005. Would you take a moment to review this exhibit and let me know when you finish.**
A (Examining document) Okay.
(Exhibit No. 522 was identified for the record)
BY MR. OLIVER:
**Q Do you recognize Exhibit 522?**
A I do not recall, sir.
**Q Is this not the article presented at a Greenville, South Carolina –**
A It could be.
**Q – trade show that you discussed earlier today?**
A Possibly.
**Q It's the one you saw on the Internet; right?**
A Possibly.
**Q Do you believe that there are any ideas of**

Page 156

**yours reflected in Exhibit 522?**
A Yes, sir.
**Q Which ideas?**
A The idea of knowledge-based approach to VLSI CAD.
**Q Do you believe that is your idea, not Dr. Kobayashi's, of a knowledge-based system for translating high-level specifications to VLSI systems based on designer's expert knowledge?**
A That's correct, sir.
**Q Do you believe it's your ideas and not Dr. Kobayashi's of a mapping a set of macro operations to functional modules?**
A Say that again.
**Q Do you believe it is your idea, not Dr. Kobayashi's, to map a set of macro operations to functional modules?**
A That's correct.
**Q Did the mapping of functional modules use your Neptune program?**
A Say that again.
**Q Did the mapping of macro operations to functional modules utilize your Neptune program?**
A Are you referring to this article?
**Q Yes, the mapping that's discussed in this**

Page 157

**article.**
A Okay.
**Q Did this mapping that you claim to be your idea utilize your Neptune program?**
A The -- say that again.
**Q Does Exhibit 522 describe the concept of mapping a set of macro operations to functional modules, utilizing your Neptune program?**
A My Neptune program is a cell selection -- what are you talking "mapping"?
**Q Is there a difference between "mapping" and "cell selection"?**
A Oh, yes.
**Q What's the difference?**
A Cell selection is one thing, and mapping, you're talking about one-to-one. Cell selection, it could be more than one possibility.
**Q Do you believe that when Dr. Kobayashi describes mapping here, he does not describe cell selection?**
A Are you referring to the abstract?
**Q I'm referring to the introductory paragraph on page 997, second paragraph.**
A And what's your question again?
**Q Do you believe that the use of the term**

**"mapping" in the second sentence of the second paragraph on page 997 refers to something other than cell selection?**

A Say that one more time.

**Q Do you believe that the term "mapping," appearing on page 997 in the sentence, mapping a set of macro operations to functional modules refers to something other than cell selection?**

A Yes, sir.

**Q Nevertheless, do you believe you invented this concept of mapping as described in that sentence?**

A Yes, sir.

**Q Do you believe there is anything in this Exhibit 522 that you did not invent?**

A I did not invent the antecedent action form.

**Q Would you identify that by page and --**

A That is page 998 of Exhibit 522.

**Q You did not invent the AAF form itself; is that correct?**

A That's correct, sir.

**Q You invented the use of the AAF form in the knowledge-based system; isn't that correct?**

A That's exactly correct, sir.

**Q Do you believe the concepts described in Exhibit 522 to be the concepts patented in the 432**



**patent?**

A Say that again.

**Q Do you believe the concepts described in this Exhibit 522 to be the same concepts that were patented in the 432 patent?**

A That's correct, sir.

**Q Is that why you believe that you are inventor of the 432 patent?**

A Say that again.

**Q Is that where you believe you are the inventor of the 432 patent?**

A Why -- are you talking about what you just mentioned earlier?

**Q Do you believe that the ideas shown in this Exhibit 522 are your own?**

A That's correct, sir.

**Q Do you believe that these same ideas are the ideas in the 432 patent?**

A That's correct.

**Q Do you therefore believe that you are an inventor of the 432 patent because the ideas in this article, 522, are the same ideas in the 432 patent?**

A The reason I believe the ideas in the patent are mine is because of the documents that I have produced, my -- specifically the hand-sketched notes



and the programs that I have wrote.

**Q Any other reason?**

A Not at this point.

**Q At some other point will you have other reasons?**

A Could be, possibly.

**Q Do you have any documents that you have not produced that may refresh your recollection?**

A I do not.

**Q You made some clarifications already on the record. Are there any other changes to your testimony that you wish to make?**

A Not at this point.

**Q Are there any questions that you answered that you now believe you did not properly understand?**

A No, sir.

**Q You mentioned that you don't recall on a number of occasions. Do you at this time have any memory of anything that you at that time did not recall when I asked that question?**

A Could you say that question again.

**Q You answered "I don't recall" to several of my questions. Do you now, at this time, recall any answers to any of those questions?**

A No, sir.



MR OLIVER: I have no more questions at this time.

MR. SU: Okay. I have no questions. We will read and sign.

(The deposition was concluded at 4:30 p.m. Reading and signing is not waived).

CERTIFICATE OF OATH

STATE OF FLORIDA )
COUNTY OF LEON )

I, the undersigned authority, certify that said designated witness personally appeared before me and was duly sworn.

WITNESS my hand and official seal this day of June, 2006.

SARAH B GILROY



CERTIFICATE OF REPORTER

STATE OF FLORIDA )
COUNTY OF LEON )

I, SARAH B. GILROY, Registered Professional Reporter, certify that the foregoing proceedings were taken before me at the time and place therein designated; that my shorthand notes were thereafter translated under my supervision; and the foregoing pages numbered 1 through 162 are a true and correct record of the aforesaid proceedings.

I further certify that I am not a relative, employee, attorney or counsel of any parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

DATED this day of June, 2006.

SARAH B. GILROY, RPR, CRR
Notary Public

My Commission Expires: 02-02-10
My Commission Number DD 075718

EXHIBIT 7

**Exhibit 7**

**Annotation of the First Two Paragraphs of Ricoh's Statement**

(Underlined sections reflect citations to the original text)

In the 1980's, Yoon-Pin Simon Foo was a student at the University of South Carolina, and was one of several students who worked for Dr. Kobayashi's company, International Chip Corporation ("ICC"). (Exh. 6, Foo Tr. at 6, 35-36). Dr. Kobayashi recruited Mr. Foo to the University, and acted as his advisor for several years. (*Id.*) In 1987, Mr. Foo had a disagreement with Dr. Kobayashi regarding Mr. Foo's failure to complete a project for ICC, and Mr. Foo changed advisors. (*Id.* at 35-39, 81, 108). Prior to the falling out, Mr. Foo did some limited computer coding work for ICC, and under the direction of Dr. Kobayashi, helped enter some the computer software code that was included in a version of ICC's software called Knowledge Based Silicon Compiler. (*Id.* at 36, 63, 71-73). KBSC's documents reflect that Mr. Foo was among the least active of the students who did work for ICC. (Exh. 8, KBSC check registers showing payments to many students for KBSC work).

Nearly twenty years later, in April 2006, counsel for the Aeroflex Defendants and Synopsys contacted Mr. Foo, and agreed to pay him $250 per hour to "consult" about Mr. Foo's work for ICC in the 1980's. (Exh. 6, Foo Tr. at 17-19). Defendants' counsel exchanged a large number of documents with Mr. Foo, but have refused to produce them. (Exh. 3, Foo privilege log.) Apparently as a result of these conversations, on April 24, 2006, defendants alleged for the first time in their supplemental invalidity contentions, claiming on information and belief that Mr. Foo was the inventor, or at least a co-inventor, of some of the concepts disclosed in the '432 patent. (Exh. 1, at 11-14). Ricoh promptly subpoenaed Mr. Foo as a fact witness on May 3 (Exh. 2), and on May 19, 2006, defendants produced some documents, as well as a privilege log. (Exh. 3). On May 22, Ricoh's counsel challenged the assertion of privilege (Exh. 4), and the next day defendants' counsel (Ms. DeMory) responded that "[w]e have properly asserted privilege with regard to all logged communications and will not be producing any additional documents." (Exh. 5). Mr. Foo was deposed on May 31, 2006, where he made several astonishing claims, including the fact that he was the sole inventor of claim 13 (the main claim asserted in this litigation), but had virtually no documents to back this assertion, and never told anyone about it his "invention." (Exh. 6, Foo Tr. at 131-36).

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

| | |
|---|---|
| RICOH COMPANY, LTD.,<br>Plaintiff,<br>vs.<br>AEROFLEX ET AL,<br>Defendants. | **CASE NO. CV 03-4669 MJJ (EMC)**<br>**CASE NO. CV 03-2289 MJJ (EMC)** |
| SYNOPSYS, INC.,<br>Plaintiff,<br>vs.<br>RICOH COMPANY, LTD.,<br>Defendant. | **MANUAL FILING NOTIFICATION** |

Regarding: Exhibit 8 to the August 10, 2006 joint letter to the Honorable Edward M. Chen.

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[_] Other (description): _____

Dated: August 10, 2006

Respectfully submitted,

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By:_____/s/_____
Kenneth W. Brothers

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